

Warriors, weapons, and harness from the 5th–10th centuries in the Carpathian Basin

Editor
Călin Cosma



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IN THE CARPATHIAN BASIN

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Academia Română
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An attempt to classify the stirrups dating from the 10th century and the first quarter of the 11th century in the Transylvanian Basin, the Crişana/Partium and the Banat with an outlook to the Carpathian Basin

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Abstract: One of the classic inventory pieces of the burials with horses are the stirrups, which signals the existence of a saddle in the grave, form a significant number of the material culture of the 10th century and the first quarter of the 11th century. The article aims to examine stirrups in a more complex way covering all the elements of the body of the stirrup. It means the analysis of both functional and technological details.

Our analysis is regional, but by this we would like to draw attention to the fact that a more complex analysis of stirrup finds might cast light to several connections that could not have been noticed by earlier studies due to their methods.

Keywords: Transylvania/Crişana/Banat, 10th–11th century, burials, horses stirrups

A. Introduction: on the burial in the 10th century (Fig. 1)

Burial customs are considered the most important elements in the definition of the 10th century cultural ‘horizon’, cultural ‘conglomeration’¹. The burial customs mainly reflect the emotional reactions of the family members, relatives and the community when someone passes away², and the most important condition of the quality and the quantity of grave furnishings was the wealth of the individual, the family or the community, certainly in most cases it was closely related to the social status of the deceased. It is expressed clearly with the quality and quantity of the *ritual sacrifices, weapons, clothes and jewellery* placed in the grave. We have to bear in mind that the quantity of the objects and sacrifices largely depends upon the political or economic situation in a region, the significance of the roads crossing it, or whether it is in a central or peripheral situation and to all these, some occasional foreign presents (!) should be added, which are palpable in some cases and might indicate the political significance of a person or a family.

The various aspects of burial customs are in close connection with the way the mourners’ grief is shown as the relationship of the deceased person with the mourners was differentiated during their lifetime and it stayed the same at the moment of death. Burial customs are the materialization of this psychological situation that can be seen in the graves, and the quality and quantity of grave furnishings connected to them. Therefore, one cannot talk about the grief of the mourners as it is different from time to time. So the ‘parcel of furnishings’ is also different in terms of its quality and quantity in each and every case. In our opinion, the feeling of grief is the **core** of the psychological phenomenon in connection with burials, the picture of the other world is a complementary element in the process of mourning and the burial, which can both relieve the grief of the mourners, and it can influence

¹ On the concept of the dynamic character of the culture, see for example: Mannheim 1995, 25–51.

² Brather 2008, 255, Fig. 5.

burial customs and the various objects placed in the grave, i. e. the grave furnishing. The process of this phenomenon is illustrated below:

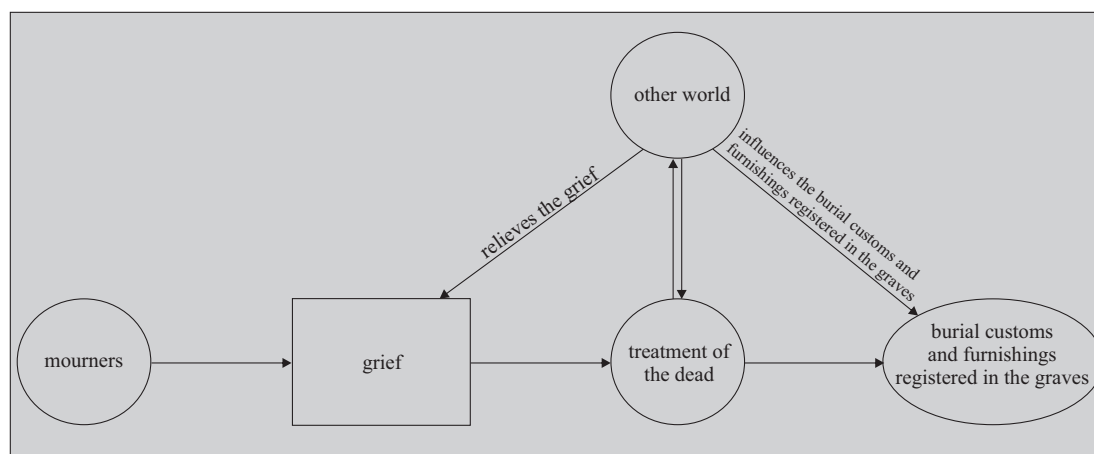


Fig. 1. The possible connection between the grief of the mourners and the picture of the other world.

The archaeologically excavated grave contains the remains of a deceased person or of several people, but the goods found in the grave might relate to how the mourners represent the deceased person's prestige and they can (also) emphasize the importance of the family³. It is quite understandable, in the 'pagan' age, that the mourning community or family wants/wanted the deceased person to appear in shining glory when they escort/escorted him/her on their last journey, in the presence of the local community. So the grave good assemblage found alongside the deceased person was meant to indicate the economic potential, welfare, prestige, influence and power of the mourners and their legitimacy, and as a consequence of this the (achieved) social position, status or rank of the deceased person⁴. We can speak of the symbolization of the status of the deceased person, although it must be admitted that this happens in an indirect way (by the relatives). Therefore it might be risky to see grave goods as the concrete reflections of the mobile, frequently changing or stagnating social positions of individuals from different social groups. However, it is undeniable that there must have been a close relationship between them, although, at least in theory, this might not have prevailed into modern times. It can be firmly stated that grave assemblages could symbolize the last status/statuses⁵ of the deceased person, and therefore we can talk about a static other-world representation of the statuses the individuals of a society had achieved by the time they died.

The grave furnishing is only 'temporarily' visible to those who are left behind⁶, but their mnemonic power is undeniable and this statement in the 10th century can absolutely be applied to the weapon and horse burials⁷. In contrast with this, the outer elements of burials/cemeteries, such as the topographical location, mounds etc, and their integration into the landscape do not only affect the landscape itself but the state and identity of the community too. Based on this important *social-psychological* aspect, the topographical location of the burials seems to be connected to the level of organisation in a community and to symbolise the social differences between communities or groups of people⁸.

³ For example: Härke 2000; Parker Pearson 2001.

⁴ In this sense we can cite Parker Pearson's words: 'Tombs are not just somewhere to put bodies: they are representations of power. Like ritual, funerary architecture legitimizes and extends the hegemonic order'. Parker Pearson 2001, 196.

⁵ In an abstract sense status, even in the early Middle Ages, meant a social position. Status in its abstract meaning is a position in a pattern, so each individual has several statuses as everyone is part of the materialization of several patterns. It is an important fact that society has created two types of statuses: the proprietary (e. g. sex, age) and the acquired status (e. g. warrior), whose symbolism, a treasure trove of its symbols can be found in the burials of the time of the 'Hungarian Conquest'. The factor of the social class or cast may rarely substitute (if at all) for the gender, the age or the biological relations. The *role* is the dynamic aspect of the status, the individual plays a role when practicing his/her rights and obligations that make up the social status. The very complicated phenomenon of the two status types can be observed in the formation of group identities in the early Middle Ages. Gilkeson 2010, 65; Linton 1964, 113–115.

⁶ Effros 2003, 175.

⁷ Høilund Nielsen 1997, 129–148.

⁸ For example, in the 19th century in Gâmbaş, besides the two big cemeteries (the Reformist and the Orthodox) there was the graveyard of the Zeyk family containing a few graves. From this point of view see also: Effros 2003, 122.

In early medieval societies male violence has a complexity and a social-embedded nature. However, violence and the use of weapon were integral elements of masculine personal identity, particularly for elites⁹. In these ways, weapons became an integral part of commemorating personal and group identities. The symbolic significance and mnemonic impact of weaponry could also have derived from the rich and complex decorations applied to weaponry (for example in the 10th century sabre from Schatzkammer or the weaponry from the rich graves from Rakamaz, Karos, Zemplin, etc.). These decorated weapons may have been powerful visual statements of identity. In our opinion, the use of weapons and its prestige influenced these communities' picture of the other world effectively 'militarizing' it.

Among the burial customs of the 'conquering Hungarians' one of the symbols of the *male warrior* was the weapon and parts of the horse in the grave, which must have been in connection with the concepts and the way of thinking of the 10th century 'Hungarian conquerors' and their image of the other world. However, all this was not constant, but in a continuous, dynamic change as can be traced back with more or less certainty due to funerary archaeology.

B. Horse burials. A problem of structural integration and spread of a mode? (Fig. 2–4)

The horse burial and its variants in the Conquest Period have been considered – improperly – as a 'Hungarian'¹⁰ ethno- or elite specific burial type, nevertheless this problem is much more complex.

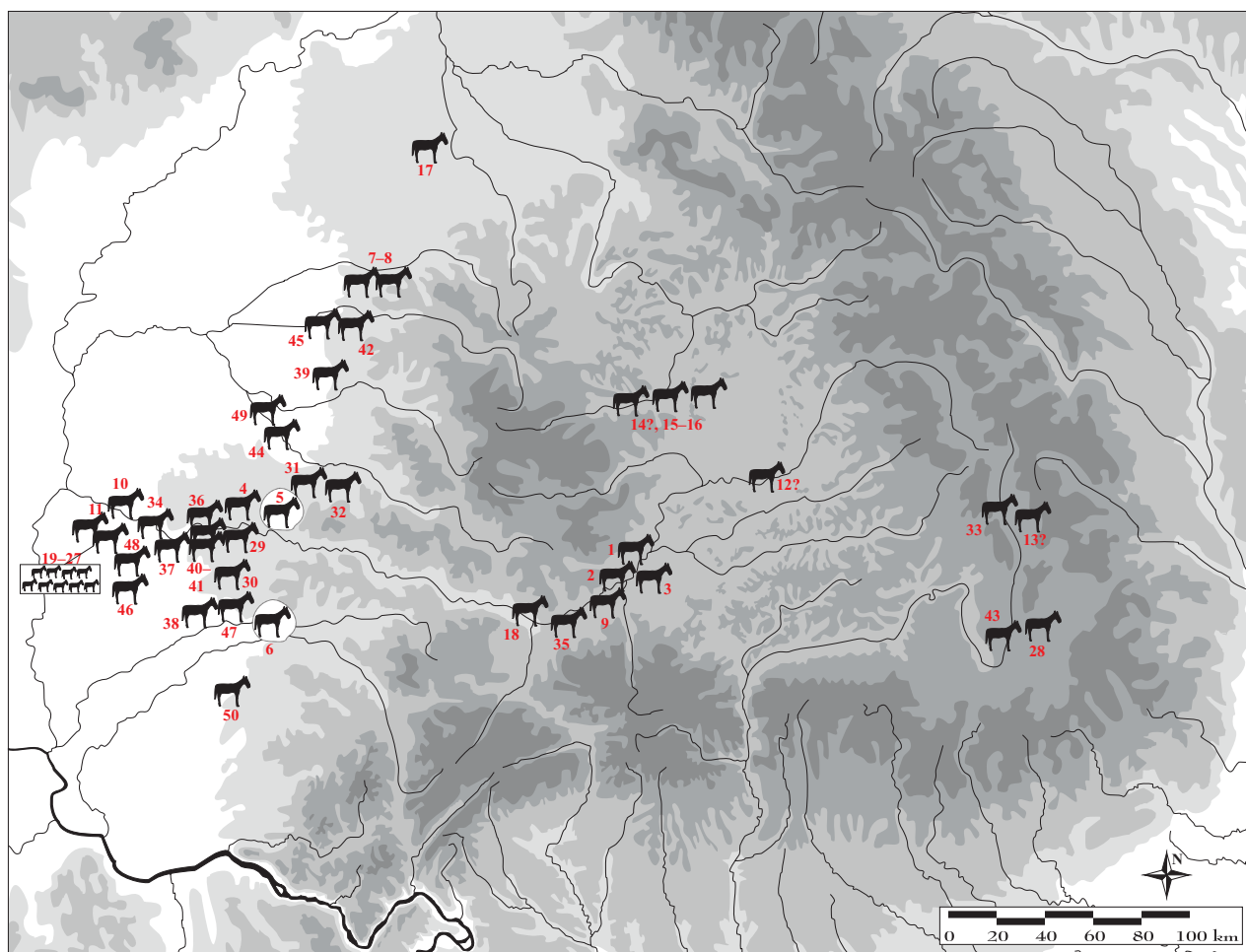


Fig. 2. The remains of 10th–11th century horse burials in the Transylvanian Basin, the Crișana/Partium and the Banat.

⁹ Ellis Davidson 1989, 11–24.

¹⁰ The archaeological inheritance of the 'conquering Hungarians' should not be regarded as ethnospecific but as a regional cultural 'conglomeration' which was characteristic of the Carpathian Basin in the 10th century. The archaeological finds that have been left for us from the 10th century Carpathian Basin, mainly finds from cemeteries, are not the relics of a community with a uniform identity, and definitely not the relics of an ethnic group. The very subjective narrative sources themselves speak of a population in the 10th century that spoke at least two languages, but there are several sources which report the rapid structural integration of the Slavonic population. In more detail: A. H. 1996, 38; Bálint 2005, 37–56; Bálint 2006, 277–347; Gáll 2013a, Vol. I, 637–640, 821–824, 880–881, 900–903, 905–907.

More than three decades ago, Csanád Bálint classified the horse burials of the Carpathian Basin; 355 finds were collected and described by the Hungarian archaeologist. In his catalogue he could include and describe only a few cases from the present day Transylvania, Banat and Crişana/Partium¹¹.

According to the data, 108 graves, single graves or stray finds (bits, stirrups) can be registered in 50 sites which are to be classified as horse burials or some variants of them (see *Annex 1*). There are 25 stray finds, in 16 cases the type of the horse burial is unknown due to the *not professional excavation* or the graves were either *disturbed* or *ransacked* and in 3 cases the graves are *not published*. In 65 cases the graves are well documented and the type of the horse burial can be identified.

Horse burials first of all could have symbolised *male warrior identity*, whose representations could have been *imitated by women*. This phenomenon in the various social communities is definitely connected to the status of women inferior to that of men. The data show that the proportion of male horse burials was much more bigger (or they were imitated by those who buried them). Besides the sociological questions, the possibility of different *cultural* background or a *population* of different origin (we did not use the word *ethnos* on purpose) should also be considered in relation to horse burials.

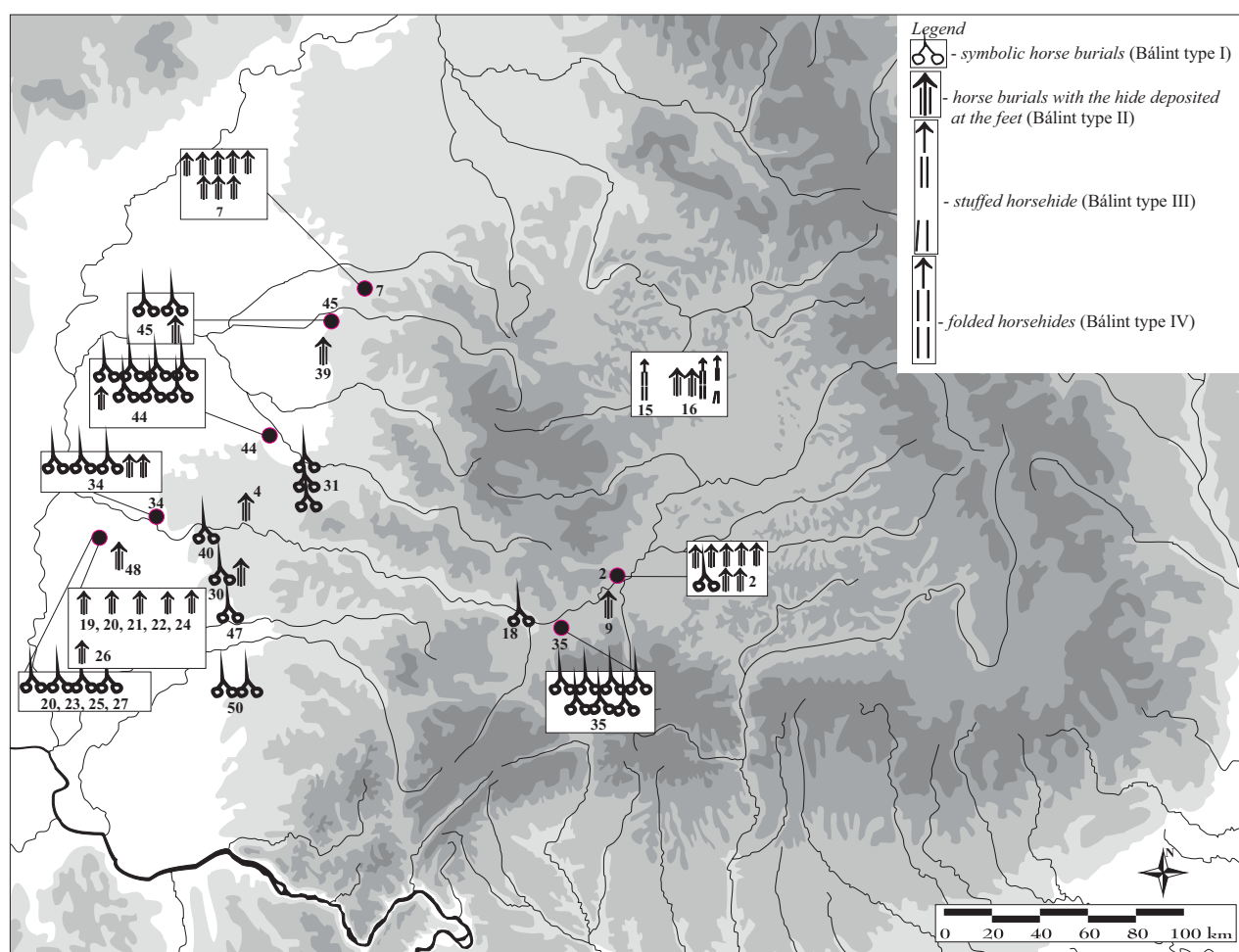


Fig. 3. The classification of horse burials in the Transylvanian Basin, the Crişana/Partium and the Banat.

The horse burials of Type I, i. e. the symbolic horse burials, in the eastern and southern Banat and south Transylvania are in stark contrast to the other type of horse burials in the north-western Banat and Northern Transylvania. How can we account for this situation? At the moment mainly chronological differences can be seen, so the suggestion that *symbolic horse burials* became more common in the second half of the 10th century is well grounded¹². But if we accept the chronological data, it also should be taken into consideration that in the second half of the 10th century not just the number of symbolic horse burials increased but the number of graves and cemeteries also show a huge growth

¹¹ Şiclău, Biharea, Cluj-Napoca-Zápolya Street, Sfântu Gheorghe-Epreştetű. Bálint 1969, Map.

¹² Bálint 1969, 107–114.

compared to the number of graves dated to the first half of the 10th century, so this issue should be analysed in a statistical aspect too. Analysing on a quantitative scale it is obvious that according to modern typochronology, the number of cemeteries that can be dated to the second half of the century is bigger, so it is logical that the number and percentage of horse burials should also be bigger.

The fact that horse burials are to be found in different geographical environments and in cemeteries of different sizes raises the question of whether all horse burials can be considered 10th century 'Hungarian conqueror' burials? The best example of this is the person in Alba Iulia-Stația de Salvare Trench 4 Grave 1: the skeleton in this partial horse burial was placed in the grave in E–W direction and a stone cover was placed on it.

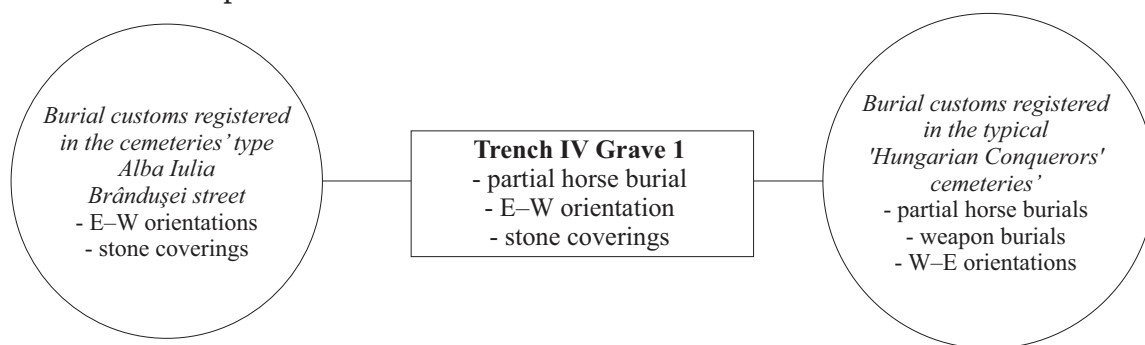


Fig. 4. Burial customs of different origins in Trench IV, Grave 1, Alba Iulia-Stația de Salvare.

It is important to emphasize that stone-brick cover burials and E–W orientation (reverse orientation) can be classified as a custom **alien** to the 'conquering Hungarian' burials¹³. Based upon the only unpublished, grave in which all three customs can be observed, it is impossible to answer the question by archaeological means whether the 10th century conquerors adopted the tradition of *reverse orientation* (it is also alien to the population of horse–weapon burials) and that of *stone-brick cover* burials or the population of *reverse orientated* burials **adopted** the custom of *horse–weapon burials* from the 'conquering Hungarians'. How can we account for this? Can we see this as a sign of acculturation and structural integration? The only remaining question is: how deeply and to what extent did it affect the conquered people?

So it seems to us that the issue of the *territorial range* of horse burials and their *spread* in the 10th century in the Carpathian Basin, like the issue of lock rings with S-shaped ends¹⁴, is not an economic¹⁵ but a cultural-anthropological issue too, and may be connected to the mingling of the 'conquering Hungarians' with the population that was conquered or brought here, or to the new eastern population from the second half of the 10th century, and their cultural acculturation, assimilation and structural integration, which might have taken place at different paces.

This kind of processes can take place sooner or later, in our opinion, this could be generated by two phenomena:

1. Why were the conquerors interested in integrating the different layers or individuals of the conquered population into their structures?
2. To what extent could the individuals of the conquered population integrate, in this case becoming a 'conqueror Hungarian'?

Reconstructing the complicated sociological and socio-psychological phenomena generated by the political-military elite after the conquest is an even more difficult task. Taking into consideration the written sources and the archaeological finds, in the first step the definition of *structural integration* can be applied to the relationship between the 'Hungarian conqueror' political-military structure and a part of the local communities at the end of the 9th century and the beginning of the 10th. We have to mention that the goal of the integration process is the organisation of the mutual relationship of communities, in accordance with the principle of fitting to one another. However, as a result of this, sometimes cultural enclaves change integrity to such extent that only the third generation will be able to accommodate to the whole system¹⁶. In our opinion, integration also requires a necessity to adapt

¹³ Gáll 2010, 294–303; Gáll 2013a, Vol. I, 153–156, 597–601, 602–606, 637–640, 871–875, 880–881.

¹⁴ Gáll 2009, 157–175; Gáll 2013a, Vol. I, 163–168, 641–658, 882–883.

¹⁵ Bálint 1969, 112.

¹⁶ AEKK 2010, 182.

and a capacity, which in turn modifies the cultural features of a particular entity, accompanying *acculturation*¹⁷. For example on the integration process, the name of 'Bugat Rex' (Bogat) is mentioned by Liutprand, which means that Slavonic units led by Slavonic chiefs or big men also took part in the 'Hungarian' power structure's western military expeditions¹⁸.

So *structural integration* might have triggered such processes that can be proved by the above mentioned archaeological examples, although to a limited extent. In our opinion, these are the archaeological examples of the imitation and social adaptation of fashion waves generated within the frames of power structures. Only the networks of power structure can account for their gaining ground, at the same time they can undoubtedly be interpreted to have been above (groups of populations)¹⁹.

C. Stirrups dating from the 10th century and the first third of the 11th century (Fig. 5)

One of the classic inventory pieces of the burials with horses are the stirrups²⁰, a fact which signals the existence of a saddle in the grave. The saddle made of organic material usually decomposes so the remaining elements which can be found by archaeologists are the iron stirrups and the bigger sized strap buckles.

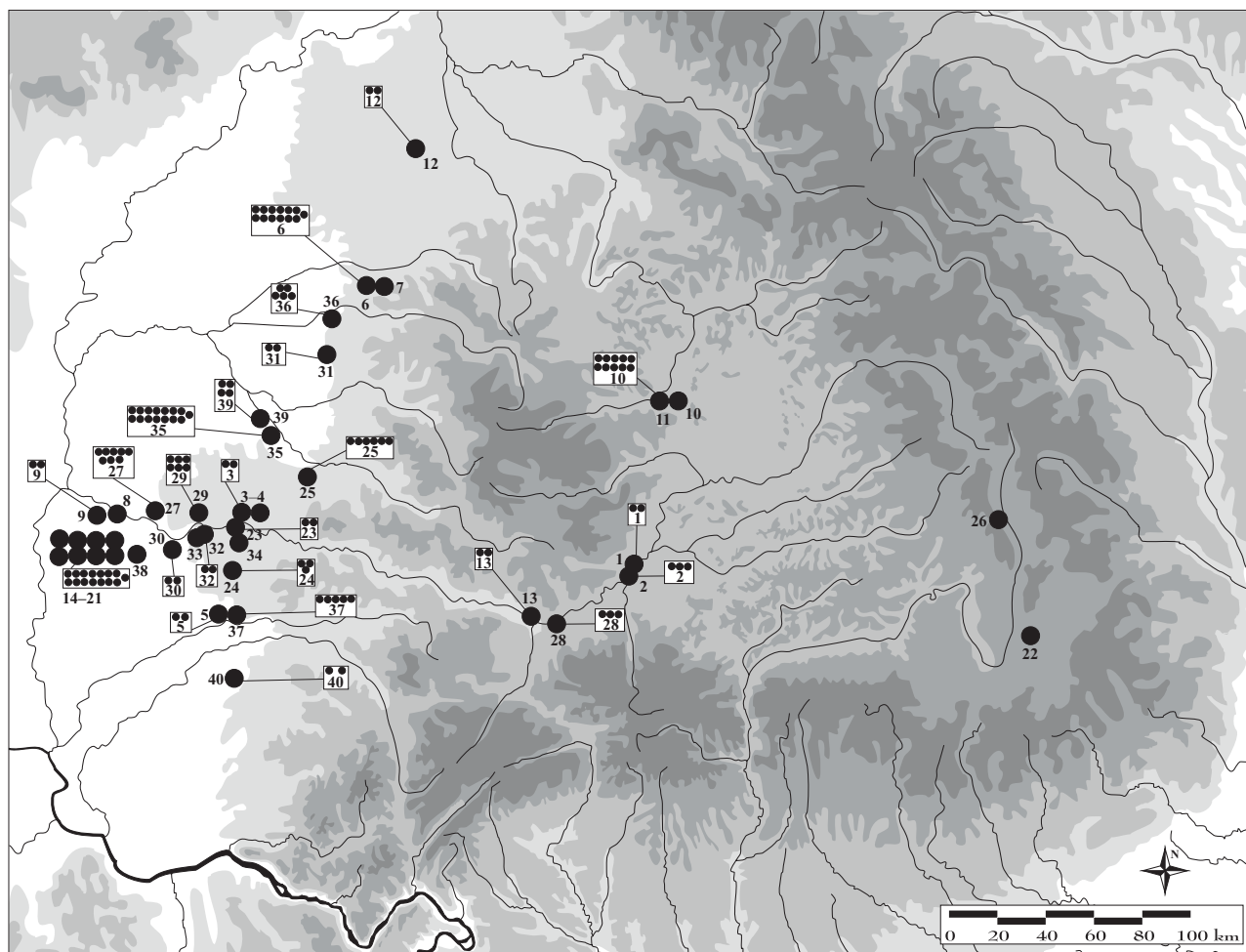


Fig. 5. The 10th–11th century stirrups in the Transylvanian Basin, the Crișana/Partium and the Banat.

¹⁷ AEKK 2010, 21–22. In our research of this era, we think the term *acculturation level* created by Gyöngyi Bindorffer appropriate, its highest level or its result is *cultural assimilation*. Bindorffer 2001, 141.

¹⁸ Kordé 1994, 116; Langó 2007, 18, note 13.

¹⁹ According to Sebastian Brather, archaeology cannot be used to identify 'ethnic' groups, which opinion the author of these lines can only agree with. Brather 2002, 152–156.

²⁰ On the 10th–11th century stirrups in the Carpathian Basin: Hampel 1896; Hampel 1900, 239; Hampel 1905, 55–59; Szőke 1962, 33–34; Bakay 1965, 19, 21; Bakay 1965, 142–149; Dienes 1966, 208–232; Ruttkay 1976, 353–256, Abb. 74; Mesterházy 1981, 220–222; Kovács 1985, 125–139; Kovács 1986, 195–225; Schulze-Dörlamm 1988, 373–478; Révész 1996, 43–46; Révész 1999, 267–299; Istvánovits 2003, 348–351; Langó 2007, 131. kép.

The stirrups form a significant number of the material culture of the 10th century (few of them may even be dated to the 11th century) in the three regions together with the other harness parts: from 40 sites 131 pieces are known. In 56 burials altogether 95 stirrups were identified and to this we can add the 36 pieces of stray stirrup finds. From the Transylvanian Basin 24 (*Annex 2*: S. 1, 2, 10, 11, 13, 22, 26, 28), from the Banat 42 (*Annex 2*: S. 5, 8, 9, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 30, 32, 33, 34, 37, 38, 40) and from the Partium 65 examples (*Annex 2*: S. 3, 4, 6, 7, 12, 25, 27, 29, 31, 35, 36, 39) are known.

As can be seen on *Fig. 5*, although grave finds have been excavated in Transylvania in the greatest number²¹, the number of stirrups (and the number of burials with horses) excavated in the Banat and the Crişana/Partium is higher than the number of stirrups found in Transylvania, but it can be connected to the number of burials with horses.

In the majority of the cases the stirrups found in graves turned up in pairs, in few cases only one stirrup was registered: Biharea-Somlyóhegy Graves 2, 4 and 6, Dudeştii Vechi-Pusta Bucova Mound VIII, Hodoni Grave 3, Cluj-Napoca-Plugariilor Street Grave 25, Cluj-Napoca-Zápolya Street Graves 1 and 11, Nădlac Graves 4 and 6, Şiclău Grave 9, Tărian Grave 36, Tomnatic-Kleine Hügel Grave 2.

The methodological basis of the attempt to classify stirrups (Fig. 6)

In the past more than 170 years a considerable amount of stirrup finds have been excavated in the graves dating from the 10th and the first third of the 11th centuries until the so-called pagan funerary customs were gradually superseded by the Christian ones. Since then hardly any detailed analyses of this category of objects have been done, researches were content with the classification of the main types that can easily be distinguished at first sight. Therefore we tried to carry out a more complex analysis of the stirrups covering all the details. The parts of stirrups that have been distinguished by us are shown in *Fig. 6*:

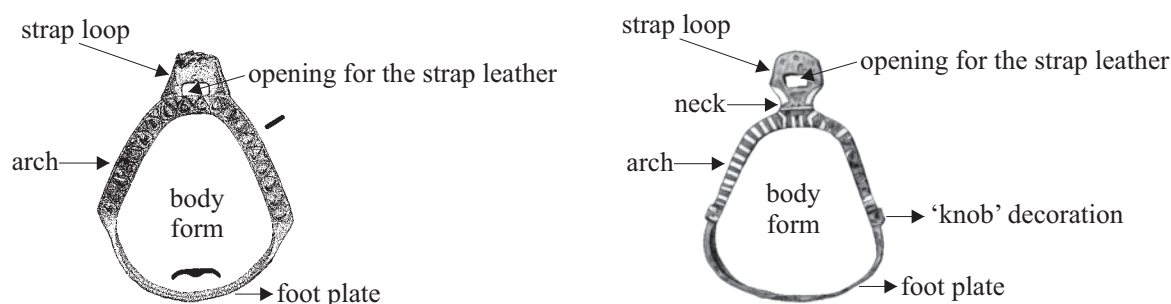


Fig. 6. The stirrup's constitutive parts.

This classification took into account the following details that are partly formal and partly technological:

- A. 1. the shape of the strap loop of the stirrup
- A. 2. the shape of the body of the stirrup
- A. 3. the shape of the arches of the body of the stirrup, so the cross-section of the stirrup
- A. 4. the analysis of the shape of the foot plate
- B. 1. the analysis of the weight of the stirrups

Our analysis is regional, but by this we would like to draw attention to the fact that a more complex analysis of stirrup finds might cast light to several connections that could not have been noticed by earlier studies due to their methods.

Starting from this supposition, we applied the aforementioned analytic method consisting of five points. In the classification of the stirrup groups we considered the body of the stirrup and the cross-section of the arches of the stirrup the most important, so these constituted the most important part of our analysis.

Type based analyses

So we are trying to analyse the stirrup finds available to us based upon the aforementioned method. According to the earlier analyses, 7 main groups of stirrups can be distinguished: *pear-shaped*

²¹ Gáll 2013a, Vol. I, 564–586, Fig. 149–171.

stirrups, forged shoulder-handled stirrups, trapeze-shaped stirrups, stirrups with straight foot plate, curved arches and strap loop with neck (see: Révész's type 1 and 2), so called the 'Cluj' (Kolozsvár) stirrup type, trapeze-shaped stirrup forged together with the strap loop, stirrups with 'forked arches'. The seventh of these types is a Western European variety, which is thought in a 'romantic' way to have caught on through the raids, although there is a number of other explanations for it.

C.1.1. So called pear-shaped stirrups (see Annex 2; Fig. 7–16; Plate 1; Table 1)

Classically, the terminology of the 'pear' – shaped cavalry stirrup used in the literature, from a formal point of view, is not exactly defined. This group of stirrups makes up the greatest part of stirrups found in 10th century graves, therefore we considered it important to analyse and classify them as exactly as is possible. The latest attempt was made by Eszter Istvánovits, who tried to separate the stirrup shapes called 'pear' and 'round' by her. On a formative basis, this division is not well-founded as is mentioned by the author herself²², as no item can be distinguished from the so called pear shaped stirrups based upon the 'round' shape of their body (there is no round stirrup concerning its shape) and the shape of the strap loop and that of the foot plate is the same in each case.

In our region 67 types of **pear-shaped stirrups** have been registered: 20 pear-shaped stirrups in the Banat (15 items in 9 graves in 8 sites, and 5 items have been found in 4 sites as stray finds)²³, 9 items have been found in the Transylvanian Basin (8 items in 6 graves in 5 sites and a stray find), and 38 items in the Crișana/Partium (31 items were found in 18 graves in 5 excavation sites and 7 items were found in 4 sites as stray finds). So it was the Transylvanian Basin where the smallest number of pear-shaped stirrups has been found.

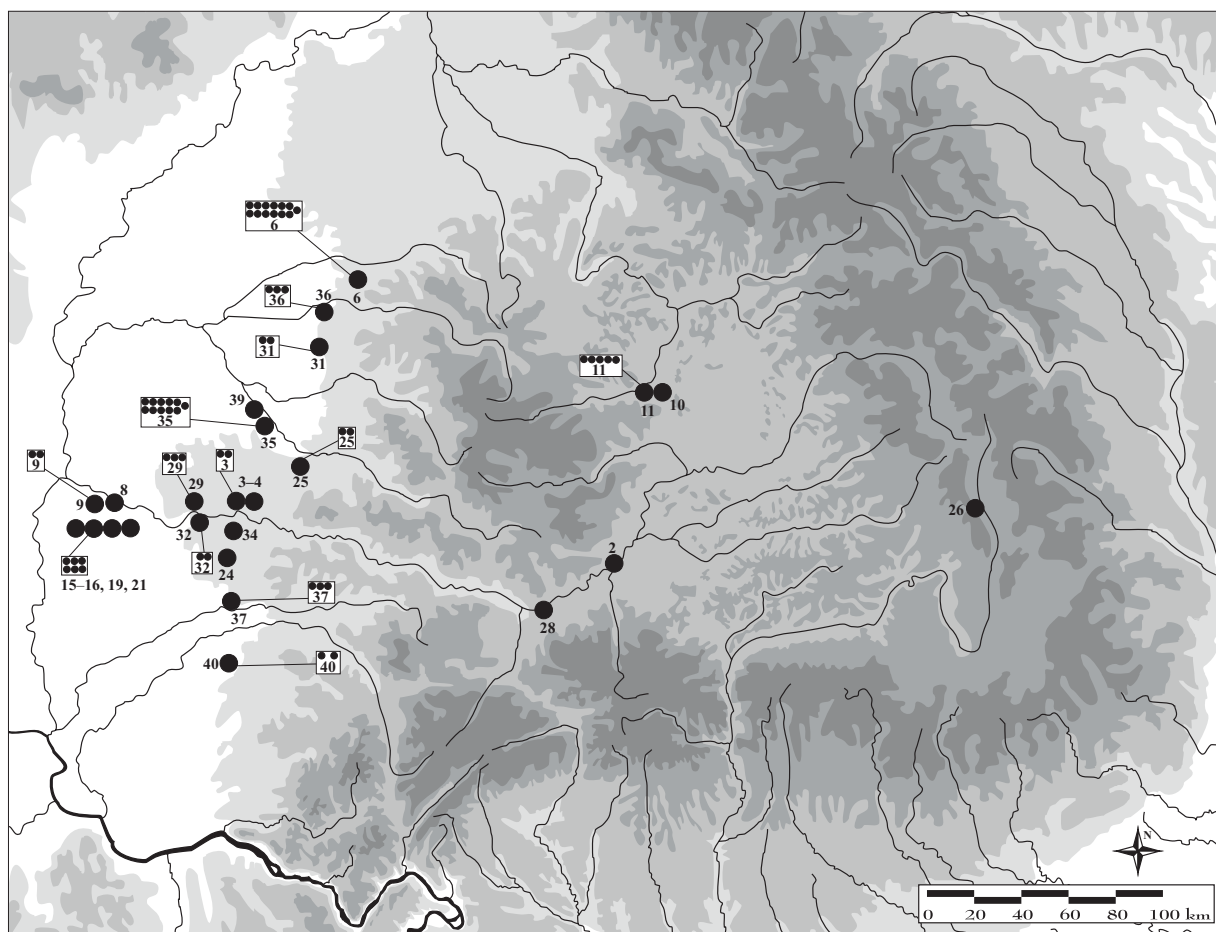


Fig. 7. The number of 10th–11th century pear shaped stirrups in each site in the Transylvanian Basin, the Crișana/Partium and the Banat.

²² Istvánovits 2003, 349.

²³ Our table does not show the pear-shaped stirrups found in Graves 2 and 3 in Mound IV Dudeștii vechi-Pusta Bucova (three items) and Dúló III in Cenadul Sârbesc-Pojána (1 item).

As has been mentioned, the different parts of the stirrups have been examined separately by us from a methodological point of view. A similar analysing method was followed in the case of **pear-shaped stirrups**. So in the case of strap loops 8 types have been distinguished (Type I: 2 subtypes; Type II: 2 subtypes; Type IV: 2 subtypes; Type V: 4 subtypes), among the shapes of stirrup bodies 6 types (Type II: 3 subtypes; Type III: 3 subtypes; Type IV: 2 subtypes; Type V: 2 subtypes; Type VI: 4 subtypes), and among stirrup foot plates 4 types have been separated. Among stirrup arches, which represent an important technological aspect as will be seen later, 4 shapes have been distinguished: flat, round, rhombus and rectangular. (**Plate 1**)

Based on this research method, the findings of our categorization are shown in the comprehensive chart below:

Sites	Types of strap loops I – type, 1 – subtype	Types of stirrup bodies I – type, 1 – subtype	The cross-section of stirrup arches	Shape of the foot plates	Foot plate types I – type, 1 – subtype	The overall types of pear-shaped stirrups types-subtypes <i>Pear – Pe</i>
Biharea Grave 7/no. 2	V/3	I	plate	curved	I →	Pe1a1
Hodoni Grave 3	V/3	I	plate	curved	- →	Pe1a1
Cluj-Napoca-Zápolya street Grave 11	V/3	I	plate	curved	I →	Pe1a1
Șiclău Grave 12/no. 1	V/3	I	plate	curved	- →	Pe1a1
Timișoara-Cioreni stray find	V/3	I	plate	curved	I →	Pe1a1
Tărian Grave 36	V/2	I	plate	curved	I →	Pe1a2
Voiteg Grave 3/no. 1	III	I	plate	curved	I →	Pe1a3
Cheglevici no. 1	III	I	plate	curved	I →	Pe1a3
Șiclău Grave 11/no. 2	V/4	I	plate	curved	III →	Pe1a4a
Șiclău Grave 1/no. 1	V/4	I	plate	curved	IV →	Pe1a4b
Dudeștii Vechi-Pusta Bucova Mound V Grave 3/no. 1	V/2	IV/3	plate	partially curved	I →	Pe1b1
Tărian Grave 28/no. 2	V/4	IV/3	plate	curved	III →	Pe1b2
Vârșand stray find	III	IV/3	plate	curved	→	Pe1b3
Cluj-Napoca-Zápolya street Grave 10/no. 2 (with ¹⁴ C analyses)	III	IV/3	plate	curved	I →	Pe1b3
Dudeștii Vechi Mound I/no. 2	III	IV/3	plate	curved	IV →	Pe1b4
Cheglevici no. 2	III	IV/3	plate	curved	I →	Pe1b4
Arad County – stray find	IV/2	IV/3	plate	curved	I →	Pe1b5
Biharea Grave 5/no. 2	IV/2	IV/3	plate	curved	- →	Pe1b5
Biharea Grave 7/no. 1	IV/2	IV/3	plate	curved	I →	Pe1b5
Orăștie Grave 43	IV/2	IV/3	plate	curved	- →	Pe1b5
Jigodin	V/1	IV/3	plate	?	- →	Pe1b6
Dudeștii Vechi-Mound I/no. 1	IV/2	IV/3	plate	partially curved	IV →	Pe1b6
Biharea Grave 5/no. 1	II/2	IV/3	plate	curved	I →	Pe1b7
Șiclău Grave 2/no. 1	V/3	II/3	plate	curved	II →	Pe1c1

Cluj-Napoca-Zápolya street Grave 10/no. 1 (with ¹⁴ C analyses)	V/2	VI/1	plate	partially curved	I	→	Pe1c2
Biharea Grave 8/1	III	VI/1	plate	curved	I	→	Pe1c3
Biharea Grave 2	IV/2	VII/2	plate	curved	-	→	Pe1c4
Șiclău Grave 12/no. 2	IV/1	II/3	plate	curved	IV	→	Pe1c5
Biharea Grave 1/no. 2	IV/2	II/3	plate	curved	-	→	Pe1c6
Șiclău Grave 2/no. 2	II/2	VII/2	plate	partially curved	II	→	Pe1c7
Biharea Grave 8/no. 2	I/2	II/3	plate	curved	I	→	Pe1c8
Șiclău Grave 1/no. 2		II/3	plate	curved	-	→	Pe1c8
Biharea Grave 3/no. 1	III	V/1	plate	curved	I	→	Pe1d
Biharea Grave 3/no. 2	III	V/1	plate	curved	I	→	Pe1d
Cluj-Napoca-Zápolya street Grave 6/no. 1	IV/1	V/1	plate	curved	IV	→	Pe1d
Cluj-Napoca-Zápolya street Grave 6/no. 2	IV/1	V/1	plate	curved	IV	→	Pe1d
Cluj-Napoca-Plugariilor street Grave 25	IV/1	V/1	plate	curved	IV	→	Pe1d
Timișoara-Ciorenii Grave A /no. 1	V/1	III	plate	curved	I	→	Pe1e
Dudeștii Vechi-Pusta Bucova Mound V Grave 3 /no. 2	VII		plate	?	I	→	Pe1f
Măsca/no. 1	VI	VII/1	plate	partially curved	III	→	Pe1g1
Măsca/no. 2	VI	VII/1	plate	partially curved	III	→	Pe1g1
Dudeștii Vechi-Dragomir's mound Grave 4	III	VII/ 2	plate	partially curved	I	→	Pe1g2
Biharea Grave 1/no. 1	I/1	II/2	circle	curved	-	→	Pe2a1
Timișoara-Ciorenii Grave A/no. 2	I/1	II/2	circle	curved	III	→	Pe2a1
Biharea Grave 6	II/1	IV/2	circle	curved	-	→	Pe2a2
Tărian Grave 28/no. 1	IV/1	V/2	circle	?	-	→	Pe2b
Șagu stray find	VI	V/2	circle	?	-	→	Pe2b
Pecica no. 5	VI	V/2	circle	?	-	→	Pe2b
Alba Iulia-Stația de Salvare Trench XV/1981/Grave 20	VI	VII/1	circle	curved	-	→	Pe2c
Voiteg Grave 3/no. 2	V/1	VII/4	circle	partially curved	II	→	Pe2d
Arad Grave X/no. 1	V/1	II/1	rhombus	curved	I	→	Pe3a1
Arad Grave X/no. 2	V/1	II/1	rhombus	curved	III	→	Pe3a2
Sânpetru German/no. 1	II/2	II/1	rhombus	curved	I	→	Pe3a3
Sânpetru German/no. 2	II/2	II/1	rhombus	curved	I	→	Pe3a3

Biharea Grave 4	II/2	II/2	rhombus	curved	I	→	Pe3a3
Șiclău Grave 10/no. 2	I/2	IV/1	rhombus	curved	IV	→	Pe3a4
Șiclău Grave 8/no. 1	VI	VIII/2	rhombus	partially curved	IV	→	Pe3b
Șiclău Grave 10/no. 1	II/2	VIII/2	rhombus	partially curved	II	→	Pe3c1
Pecica no. 3	I/2	VII/ 4	rhombus	partially curved	I	→	Pe3c2
Pecica no. 4	VIII	VI/2	rhombus	?	-	→	Pe3d
Salonta Grave 2/no. 1	V/4	VII/3	rectangular	?	-	→	Pe4.1
Salonta Grave 2/no. 2	V/4	-	rectangular	?	-	→	Pe4.2
Șiclău Grave 11/no. 1	III	VII/3	rectangular	?	-	→	Pe4.2

Table 1. A typological table of the pear-shaped stirrups according to their components.

As can be seen, according to the classification and analysis of the components of pear-shaped stirrups, 42 variants of 15 sub-types (1: a–g, 2: a–d, 3: a–d) of four types (Types 1–4) have been distinguished. Based upon the data shown in the table, it can be stated that a lot of variants of the components of pear-shaped stirrups were known to and used by the masters of that era (strap loop, arch, foot plate), and it resulted in a huge variety in the case of this group of stirrups. (Plate 1)

There are 7 sub-types of stirrups with flat arches falling in Type 1 of pear-shaped stirrups. One of the items of Type 1a1 (Grave 11, Cluj-Napoca Zăpolya Street) was inlaid with silver and copper plate. Hardly any parallel of it is known in the Carpathian Basin. Those four sub-types belong to Type 2 whose arches have round cross-section. Type 3 contains stirrups whose arches have a rhombus cross-section. Only three items belong to Type 4 whose arches were forged into a rectangular shape similarly to those of the typical trapeze-shaped stirrups.

Observations on the technology of making pear-shaped stirrups (Plate 1)

1. Focussing on the components of the stirrup finds available to us, it can be stated in connection with the items belonging to this group of stirrups that the elaboration of the arches connecting the flat strap loops with the flat curved foot plates is the result of different technological working processes. It means that flat arches were produced in a way different from the way round, rhombus or rectangular arches were made, which were soldered to the flat strap loops and the flat curved foot plate in the end.

2. Concerning the stirrups with flat or possibly round arches, in the case of the more simple items the strap loop and the arches must have been manufactured together.

3. In connection with the pear-shaped stirrups there is another aspect concerning their manufacturing or the quality of their elaboration. If one observes **the sub-types and variants of the types of pear-shaped stirrups**, it can be clearly stated that the items falling in **sub-type 1a1** are the most elaborated. Therefore it may not be a coincidence that the one found in Grave 11 Cluj-Napoca was ornamented. Among the pear-shaped stirrups we do not know any items that are elaborated similarly to **sub-type 1a1** or in the same quality.

4. The shape of the arches of Types 2, 3 and 4 (with round, rhombus and rectangular cross-sections) is completely different from that of the stirrups with flat arches, but it shows a close connection with the shape of the stirrups used in the 8th–9th centuries, among which round, rhombus and rectangular shaped arches are also known but with an important difference, namely that there are no flat arches. This technological difference raises a number of questions.

Typological observations (Fig. 8/A–B; Plate 1)

Due to the huge number of pear-shaped stirrups a lot of typological observations can be made.

1. The greatest number of pear-shaped stirrups fall into Type 1 or the type with flat arches.

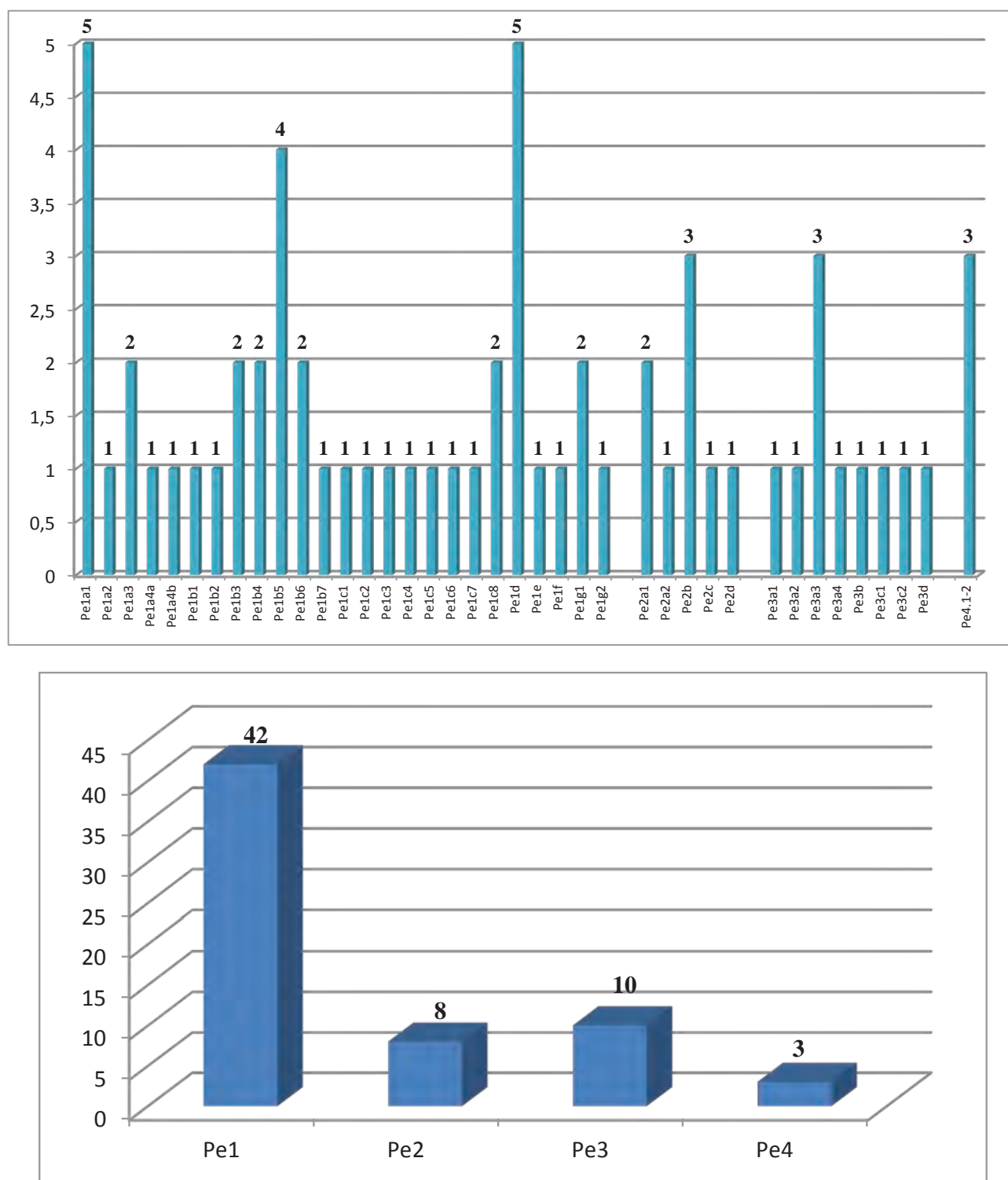


Fig. 8/A-B. The number of 10th–11th century pear-shaped types in the Transylvanian Basin, the Crişana/Partium and the Banat (Pe – pear).

2. It can be assumed that Type 1 could have been the basic type, the great amount of them might indicate this and the other types, namely Types 2–4, copied its shape (strap loop and the body of the stirrup). Their chronological connections will be mentioned later.

3. The most elaborated sub-type variant called 1a1 must have served as the example of other variants of sub-type 1a.

4. The typological analysis of strap loops shows that a considerable amount of strap loops copy the trapeze shape of strap loops of sub-type 1a1.

5. Most pear-shaped stirrups have no neck. It holds for Type 1, where a neck can only be seen in the case of sub-type 1g1. Similarly, necks are not characteristic of sub-types 3a and 3b, necks can only be found in the case of 3c1. In the case of Type 4, which only contains three items, necks have not been observed. As opposed to them, the neck is characteristic of the items that belong to 2a1–2a2, 2b, 2c, and the only group where necks have not been observed is 2d. Below we are to explain why it is so.

6. A considerable number of the pear-shaped stirrups have curved foot-plates, but in some cases (11 items) one can see only partially curved foot plates (see: *Table 1*). Observing the stirrups (Pe1b1, Pe1b6, Pe1c2, Pe1c7, Pe1g1/2 items, Pe1g2, Pe2d, Pe3b, Pe3c1, Pe3c2), it is conspicuous that some of them fall in the category of stirrups with transitional features.

7. A characteristic feature of some of the pear-shaped stirrup types that they constitute a transitional form towards the trapeze-shaped stirrups that are to be discussed later: the item Pe2c found in Alba Iulia, the item of Type 2d1 found in Pecica and the stray finds excavated in Măsca (Type Pe1g1) clearly belong here. In connection with the stirrups excavated in Măsca, it has to be noted that they were found together with 4 other trapeze-shaped stirrups in a cemetery with approximately 8 graves.

Observations concerning the geographical distribution of pear-shaped stirrups (Fig. 9–14)

1. The stirrups of sub-type 1a with flat arches have only been documented in the Great Plain and the most elaborated item was found in Northern Transylvania (Cluj-Napoca Zápolya Street, Grave 11).

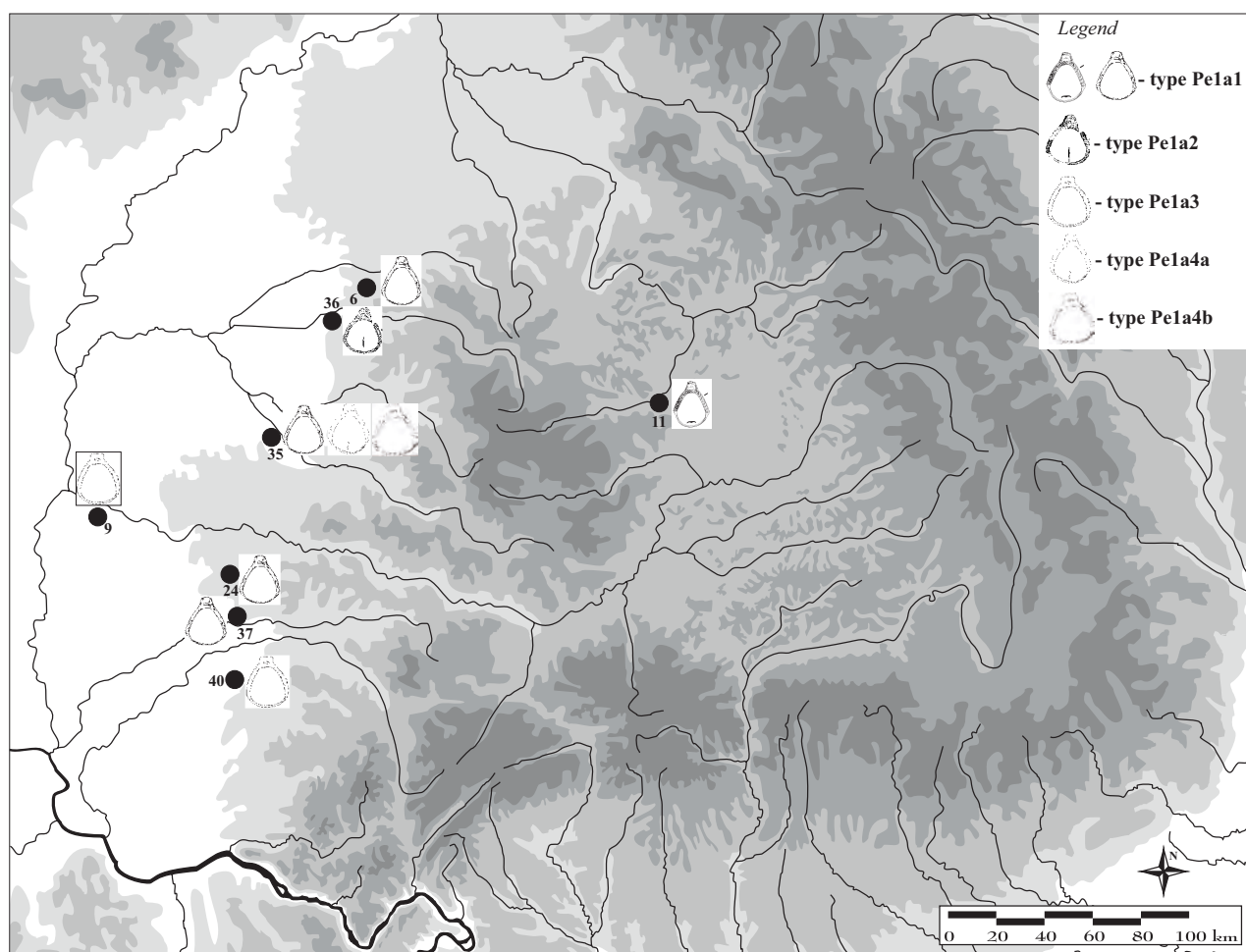


Fig. 9. The 10th–11th century Pe1a1–1a4 type stirrups in the Transylvanian Basin, the Crișana/Partium and the Banat (Pe – pear).

2. In contrast with this, sub-types 1b, 1c, 1d were common in a much larger area, some items have been found in the Transylvanian Basin too, not just in the Crișana/Partium and the Banat:

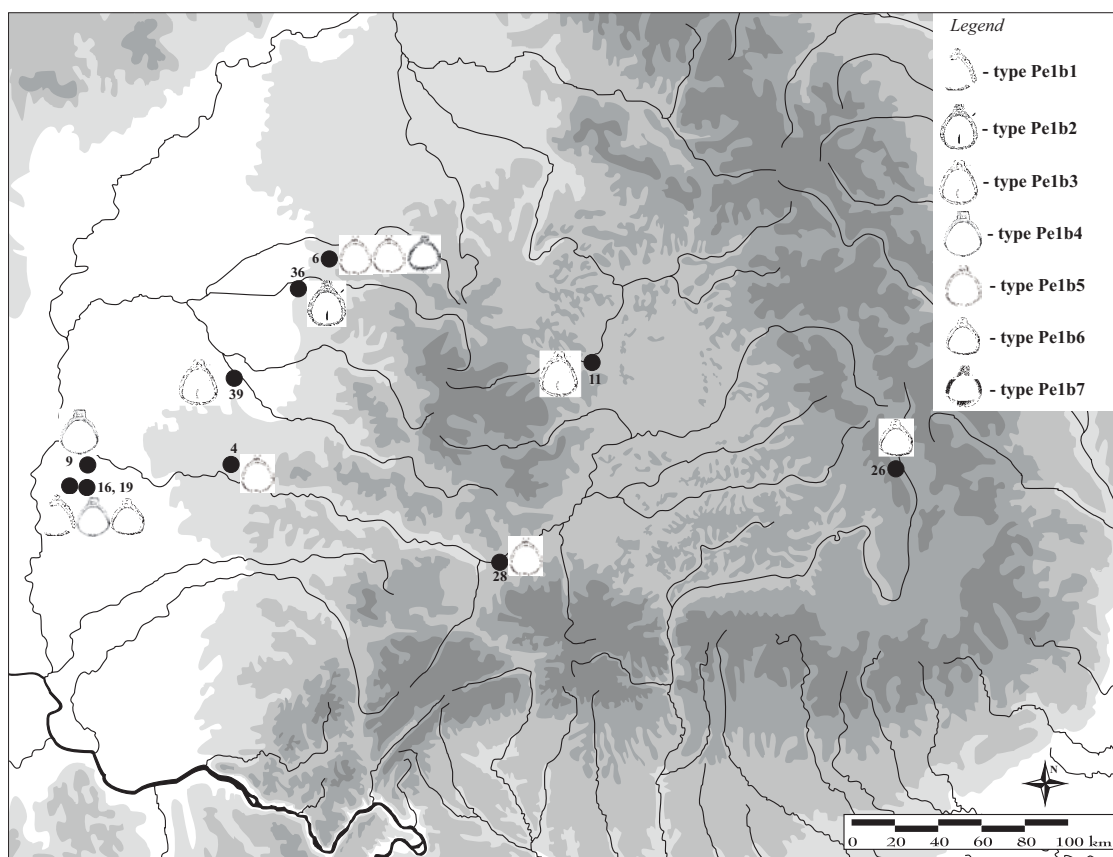


Fig. 10. The 10th-11th century Pe1b1-1b7 type stirrups in the Transylvanian Basin, the Crișana/Partium and the Banat (Pe – pear).

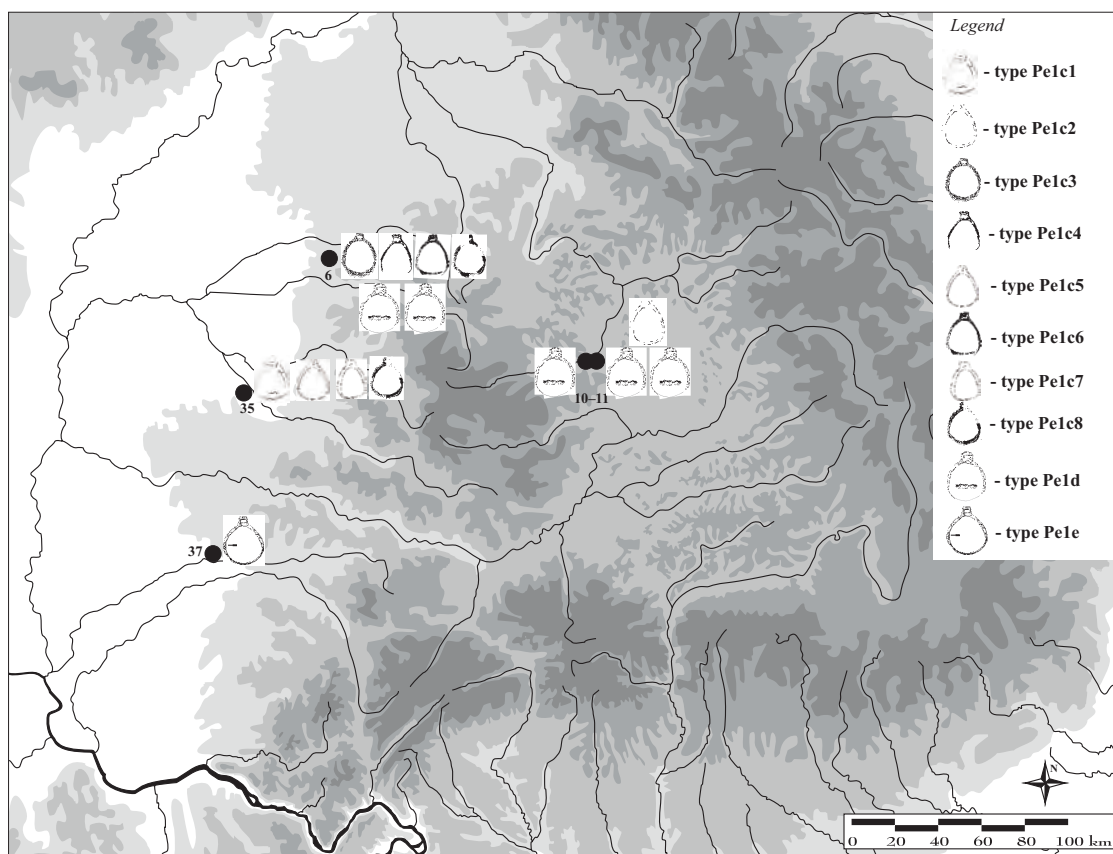


Fig. 11. The 10th-11th century Pe1c1-1c8, Pe1d, Pe1e type stirrups in the Transylvanian Basin, the Crișana/Partium and the Banat (Pe – pear).

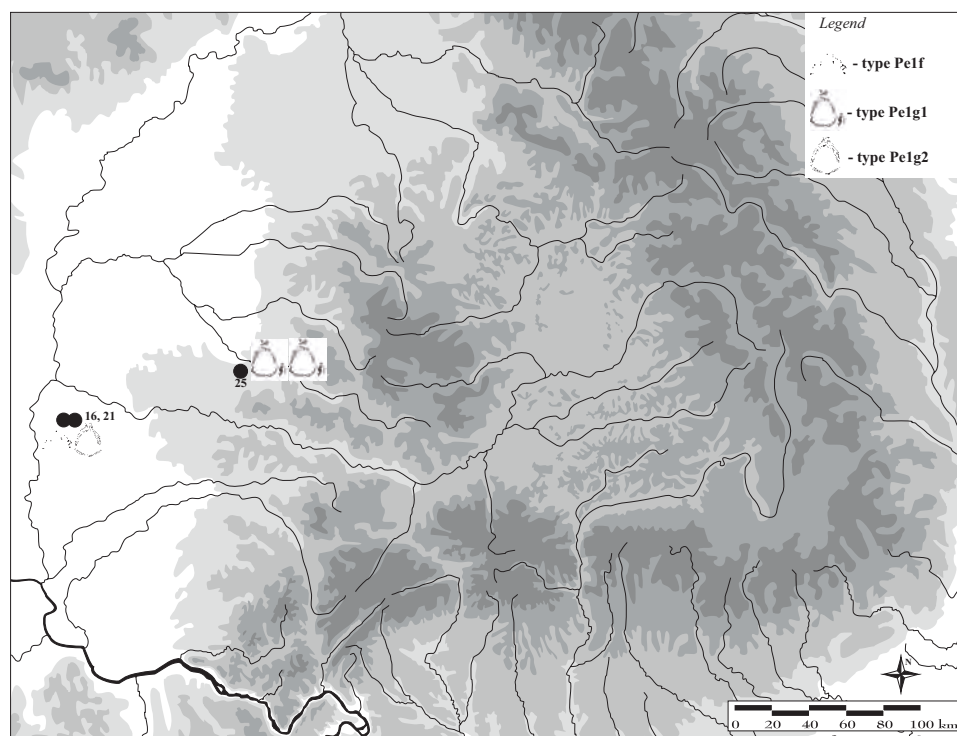


Fig. 12. The 10th–11th century Pe1f, Pe1g1–1g2 type stirrups in the Transylvanian Basin, the Crișana/Partium and the Banat (Pe – pear).

3. Stirrups that have arches with round cross-section (Type 2) are known from the Crișana/Partium and the Banat too, the only stirrup falling in the category of the transitional form found in the Transylvanian Basin is the one excavated in Alba Iulia.

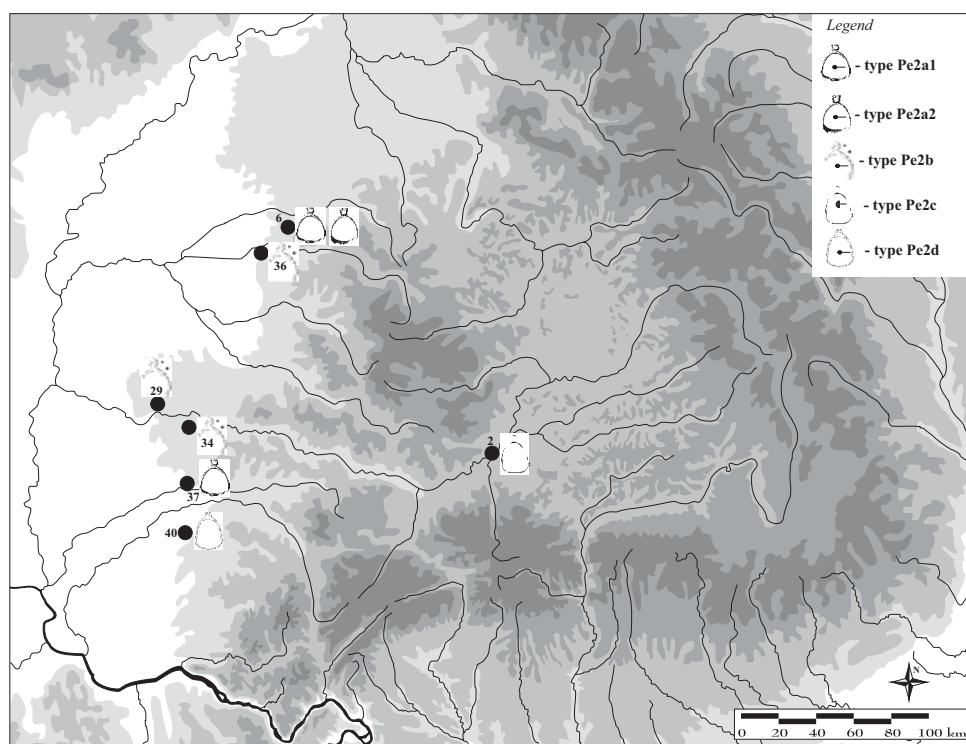


Fig. 13. The 10th–11th century Pe2a1–2a2, Pe2b, Pe2c, Pe2d type stirrups in the Transylvanian Basin, the Crișana/Partium and the Banat (Pe – pear).

4. Type 3 with rhombus cross-section and Type 4 with rectangular cross-section arches have only been found in the Crișana/Partium and the Banat so far.

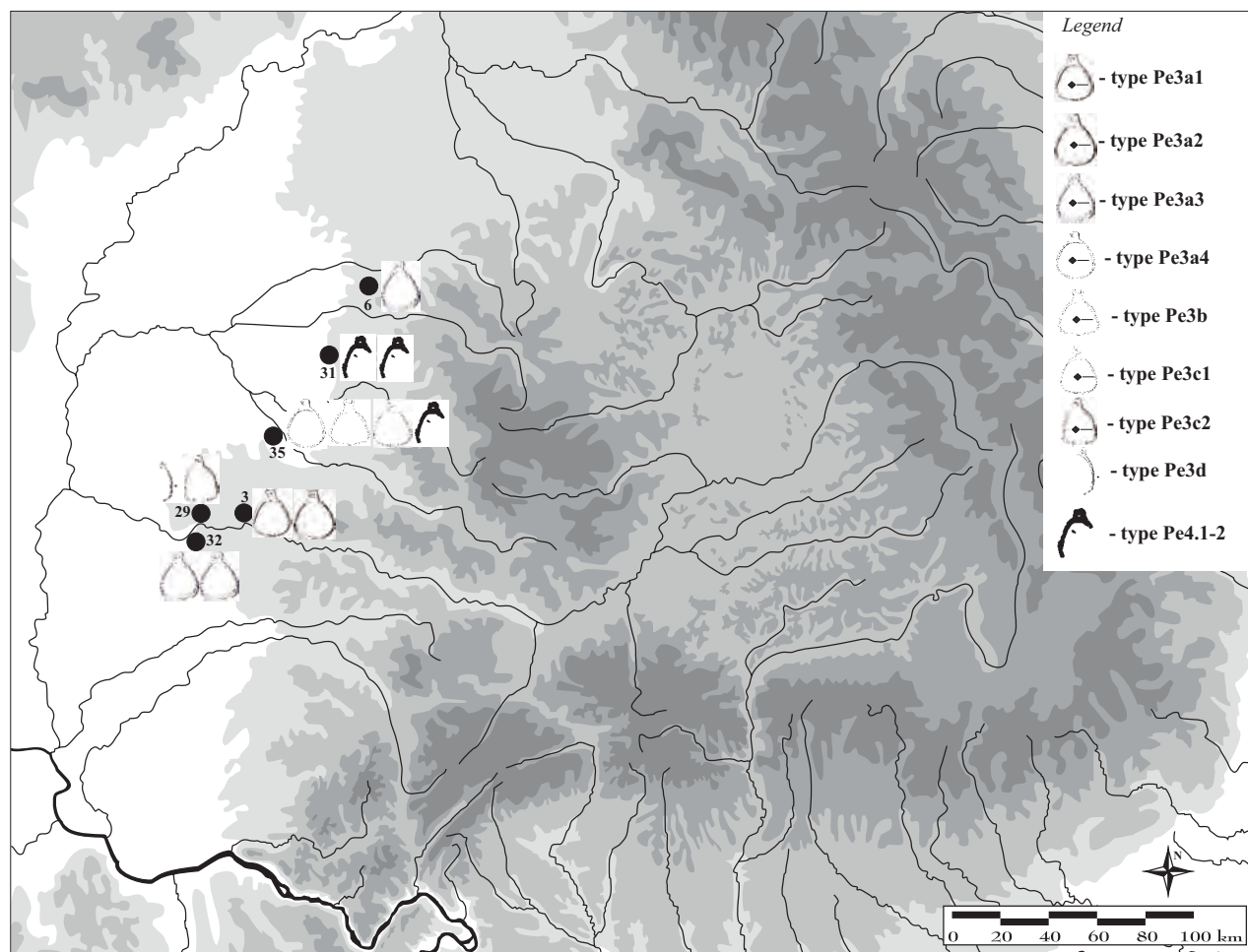


Fig. 14. The 10th–11th century Pe3a1–3a4, Pe3b, Pe3c1–3c2, Pe3d, Pe4 type stirrups in the Transylvanian Basin, the Crișana/Partium and the Banat (Pe – pear).

Based on the geographical distribution of pear-shaped stirrups we can see that burials with horses were much more common in the Crișana/Partium and Banat (eastern parts of) areas than in the Transylvanian Basin, which may be traced back to complex reasons ranging from the quantity of livestock to the burial customs. However, it must be emphasized that in the 10th century the Transylvanian Basin only meant its western swathe (the Valley of the Middle *Mureș* and some areas along the *Someșul Mic*), where the presence of the so called ‘Hungarian conquerors’ can only be detected in isolated areas²⁴.

The chronological evolution of the types, sub-types and variants of pear-shaped stirrups (Fig. 15)

The chronological classification of the pear-shaped stirrups during the 10th century and at the beginning of the 11th century is practically impossible as they were used as everyday objects and not as fashion elements, therefore their chronological range is much longer than that of the ever changing fashion elements.

Pear-shaped stirrups are known from all the three regions, but they have been found in a much smaller quantity in the Transylvanian Basin. The chronological classification of each variant can be made relying on the grave furnishing and the environment (although relatively). The chronological range of some variants makes it clear that these items could have been used for several decades or even a century. As a consequence, these objects cannot be put into a narrow chronological range:

²⁴ Gáll 2013a, Vol. I, 826–837, 905–919.



Fig. 15. The relative chronology of the pear-shaped stirrups in the Transylvanian Basin, the Crișana/Partium and the Banat.

Observation concerning the pear-shaped stirrups (Fig. 16)

Compared to the stirrups of the 8th–9th centuries, the pear-shaped stirrups of the 10th century, especially Type 1a with flat arches, did not only represent a new and up to that time unknown shape, but also a new technological process. It must be emphasized that compared to the stirrups of the 8th–9th centuries, in the case of type **Pe1** the technological and formative discontinuity is quite obvious, so it was a completely new object. As opposed to this, a technological connection can be observed in the case of types **Pe2–3**, as both the round shaped and the rhombus arches and the neck attached to the rectangular strap loop are common among the finds from the 8th and 9th centuries in the Carpathian Basin. In consequence, both a discontinuity and a technological continuity with the previous era can be observed.

We can find two (relative) explanations for the appearance of the stirrup type with flat arches (Type 1) and its spreading, but we can agree on that we can talk about a completely new shape and a new technological process in their manufacturing: 1. a cultural-political explanation: this type can be connected to the ‘Hungarian conquest’ and migration in the 10th century, but it could only be proved by finding its earlier parallels dating from the 9th century east of the Carpathian Basin²⁵; 2. in a new context of the 10th century, it can be considered as the result of an inner technological evolution or development. Whichever explanation is true, one thing is sure: these lighter stirrups gained ground in connection with the great changes that took place in the 10th century, either it was political or cultural or economic.

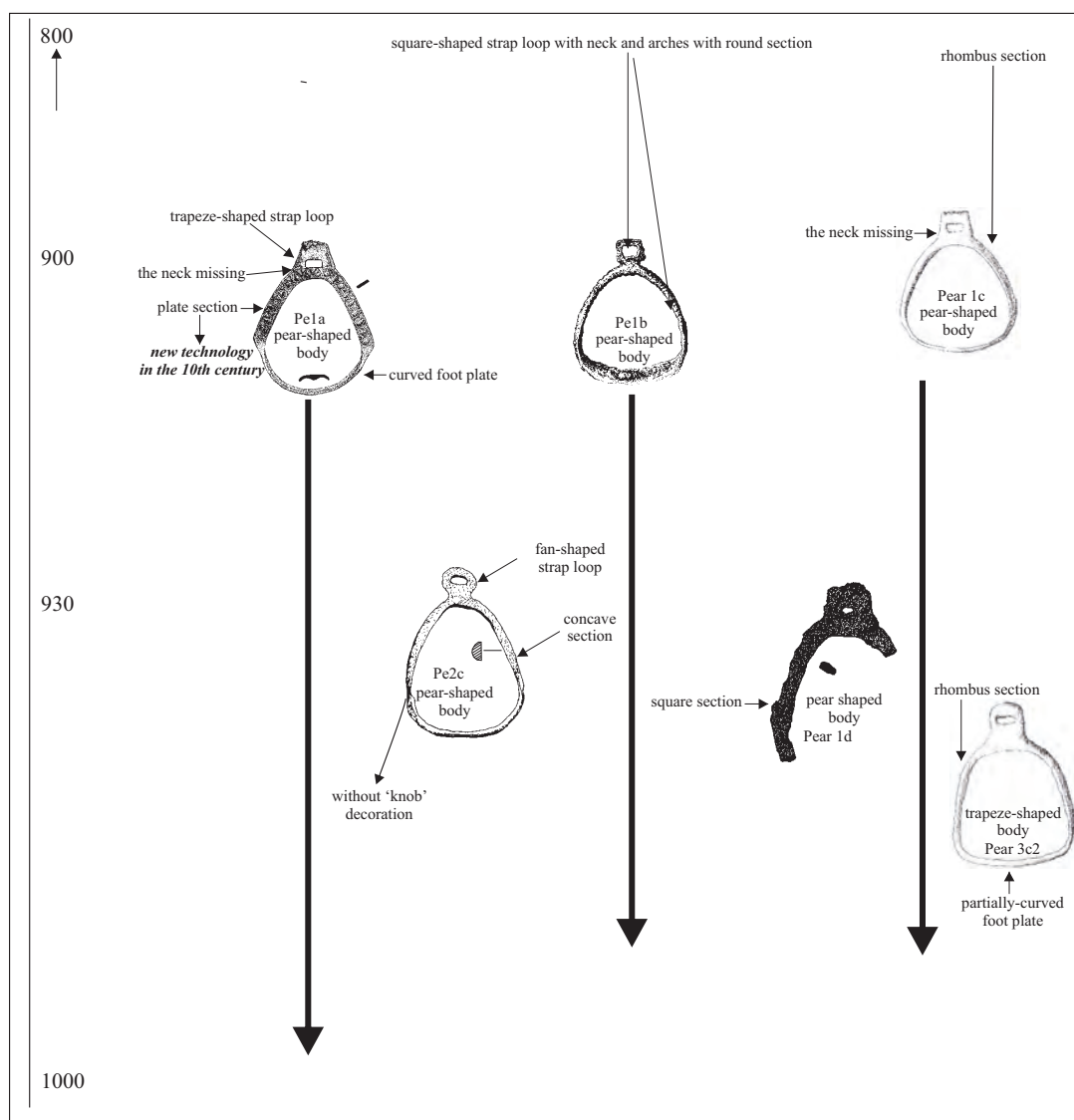


Fig. 16. The structural and chronologically connections of the different pear-shaped stirrup types.

²⁵ According to Antal Attila Türk, it is unknown in the area east of the Carpathian Basin, the issue could be further investigated in the region of the Altai Mountains.

Concerning the cross-sections of the components and the arches of Types Pe2–3, a clear but at the same time only partial formal and technological continuity can be observed. However, compared to the stirrups of the 8th–9th centuries, the design of the body of these stirrups and their grooved and curved foot plate represent a completely new manufacturing process. As a consequence, from a typological and technological point of view the small number of stirrups of Types Pe2–3 can partly be connected to the stirrups with flat plates, on the other hand, they show resemblance to the late Avar stirrups. The question as to whether it can be considered as a cultural or technological continuity or the continuity of the people cannot be answered as yet. **However, it is quite obvious that concerning their components they show a close connection with the flat stirrups of Type 1 and also with the components of the stirrups of the previous age.**

At the same time, it is also important that some items of Type Pe3 and Type Pe4 can be regarded as transitional forms towards the so called trapeze-shaped stirrups, so one can talk about a change in the shapes of stirrups in a given time period. Certainly, the question may arise as to what effects triggered the changes of these shapes or whether one can assume foreign influence in the background, but these questions remain unanswered yet.

At the end of our analysis, we are trying to show the typological and chronological connections between the stirrups of Types Pe1, Pe2–3 and Pe4 in the following way.

C.1.2. Forged shoulder-handled stirrup [Fig. 19; Plate 3/1–2]

Thought to be an archaic type, two variants can be separated:

1. In the case of the first variant the drill of the shoulder cannot be seen (Pecica–2 pieces, Șiclău-I point D – 1 piece, -Grave 9 – 1 piece). (*Annex 2: S. 27, 35*)

2. On the second variant the shoulder separated from the body of the stirrup can already be seen, practically it can also be considered as a transitional form towards the pear-shaped stirrups (Cluj-Napoca-Zápolya Street Grave 8–2 pieces). (*Annex: S. 11*)

The chronological range of the forged shoulder-handled stirrups with archaic forms is similar. The items found in Cluj-Napoca-Zápolya Street Grave 8 can be dated to the first third of the 10th century, and the one found in Grave 9 in Șiclău to the middle of that century. The dating of the two stray finds in Pecica and the stirrup found in Grave I.D. in Șiclău are much less certain.

C.1.3. The trapeze-shaped stirrups (Fig. 17–18; Plate 2; Table 2)

The trapeze-shaped stirrups are considered by archaeologists to be the most important basis of the dating of the 10th century material culture²⁶. The most significant characteristic of this stirrup type is the *fan-like strap loop*, the *square arches* and the *'knobs' set between the arches and the foot plate*. To this type 34 items can be attributed (*Annex 2: S. 5, 12, 13, 15, 18, 21, 22, 24, 25, 27, 28, 30, 33, 37, 39*): 13 items are known from the Banat, 6 items were found in 4 graves of 4 excavation sites, and 7 stray finds were found in 4 other sites. Much fewer items have been found in the Transylvanian Basin, only 6 items have been found in 3 sites: 5 items were found in three graves and there is a stray find²⁷. The greatest amount, 15 items, was found in the Partium. 8 items were found in 5 graves of one site (*S. 27*) and 7 stray finds were excavated in 3 other sites.

From a methodological point of view, like in the case of the pear-shaped stirrups, the different components of the stirrups have been analysed separately. Thus among the strap loops of stirrups, 6 types have been separated (Type II: 2 subtypes; Type III: 2 subtypes; Type VI: 2 subtypes), 3 types in the case of stirrups bodies (Type I: 3 subtypes; Type II: 2 subtypes; Type III: 2 subtypes), whereas foot plates can be divided into 4 types. A very important aspect of these foot plates, as opposed to the foot plates of pear-shaped stirrups, is the fact that a major part of their foot plates, especially in the case of Types Tr2, is only partially curved (see *Table 2*). Among stirrup arches, which represent an important technological aspect, as will be demonstrated later, three shapes can be distinguished: mainly the rectangular one, and there is one item with semi-circular and one with circular cross-section. However,

²⁶ Hampel 1896, 766; Szőke 1962, 83. This important analysis was carried out by them in 1986. Kovács 1986, 204–225. Since then only one typological table of this group of stirrups has been shown by Péter Langó. Langó 2007, 131. kép.

²⁷ In this classification table of ours we did not indicate the stirrup found in Grave 41 in Orăștie. At the same time, probably more trapeze-shaped stirrups are known from the Orăștie cemetery!

in the case of trapeze-shaped stirrups another aspect must be taken into consideration: the existence or lack of ‘knob’ ornaments between the arches and the foot plate. This is one of the bases of our classification. (**Plate 2**)

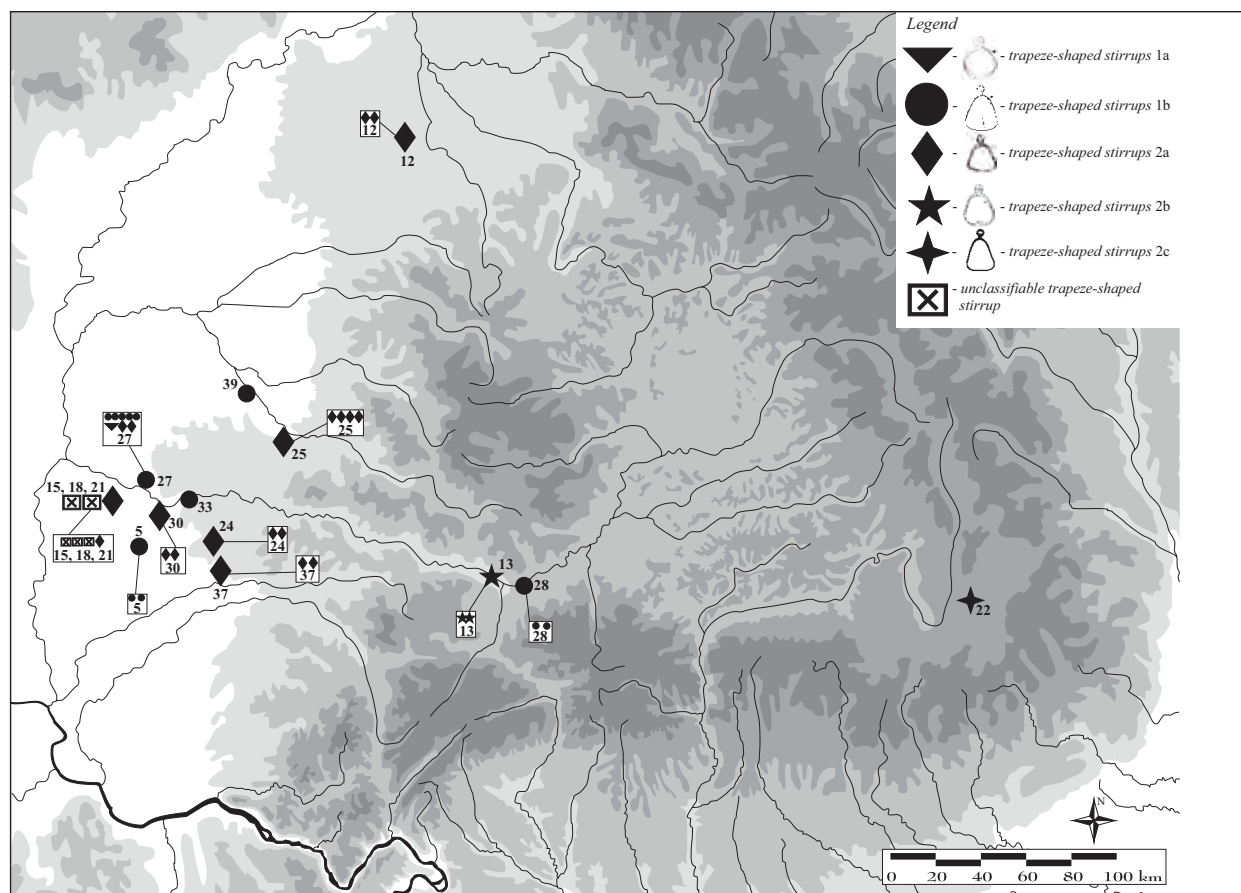


Fig. 17. The number and types of 10th–11th century trapeze-shaped stirrups in each site in the Transylvanian Basin, the Partium and the Banat (Tr – trapeze).

Based on this research method, the findings of our categorization are shown in the comprehensive chart below:

Archaeological sites	Types of strap loops I – type, 1 – subtype	Types of stirrup bodies: I – type, 1 – subtype	The cross-section of stirrup arches	Shape of the foot plates	Foot plate types I – type, 1 – subtype	The overall types of trapeze-shaped stirrups (Trapeze – Tr)
Nădlac Grave 4	III/1	I/1	rectangular	curved	II	→ Tr1a
Nădlac Grave 6	I	I/2	rectangular	partially curved	I	→ Tr1b1
Vârşand stray find	I	I/2	rectangular	partially curved	IV	→ Tr1b2
Nădlac Grave I/no. 1	II/1	I/2	rectangular	curved	I	→ Tr1b3
Nădlac Grave 13/no. 1	III/1	I/2	rectangular	curved	I	→ Tr1b3
Nădlac Grave I/2	III/1	I/2	rectangular	curved	I	→ Tr1b4
Sânpetru German-stray find	III/1	I/1	rectangular	curved	I	→ Tr1b4
Orăştie Grave 7/no. 2	III/2	I/2	rectangular	curved	I	→ Tr1b5
Orăştie Grave 7/no. 1	II/2	I/2	rectangular	curved	I	→ Tr1b6
Nădlac Grave 9/no. 2	V	I/2	rectangular	partially curved	I	→ Tr1b7
Banat stray find/no. 1	V	I/2	rectangular	curved	I	→ Tr1b7
Banat stray find/no. 2	VI	I/2	rectangular	curved	I	→ Tr1b8
Timișoara-Ciorenii stray find 1	II/1	II	rectangular	curved	I	→ Tr2a1

Timișoara-Cioreni stray find 2	II/1	II	rectangular	curved	I	→	Tr2a1
Curtuiuşen/no. 1	III/1	II	rectangular	curved	I	→	Tr2a2
Periam/no. 1	III/1	II	rectangular	curved	I	→	Tr2a2
Măsca/no. 3	IV	II	rectangular	curved	I	→	Tr2a3
Curtuiuşen/no. 2	IV	II	rectangular	curved	I	→	Tr2a3
Periam/no. 2	IV	II	rectangular	curved	I	→	Tr2a3
Hodoni Grave 17/no. 1	IV	II	rectangular	curved	I	→	Tr2a3
Hodoni Grave 17/no. 2	IV	II	rectangular	curved	I	→	Tr2a3
Nădlac Grave 9/no. 1	V	II	rectangular	partially curved	I	→	Tr2a4
Nădlac Grave 13/no. 2	III/2	II	rectangular	partially curved	III	→	Tr2a5
Măsca/no. 4	VI/1	II	rectangular	partially curved	I	→	Tr2a6
Dudeştii Vechi-Dragomir's mound Grave 4	VI/1	II	rectangular	partially curved	I	→	Tr2a6
Măsca/no. 5	VI/2	II	rectangular	partially curved	I	→	Tr2a7
Măsca/no.6	VI/2	II	rectangular	partially curved	I	→	Tr2a7
Deva Grave 3/no. 1	VI/1	III/1	semicircle	curved	I	→	Tr2b
Deva Grave 3/no. 2	VI/1	III/1	semicircle	curved	I	→	Tr2b
Eresteghin	III/1	III/1	circle	partially curved	-	→	Tr2c
Dudeştii Vechi-Pusta Bucova Mound IX/no. 1	-	II	rectangular	partially curved	I	→	Tr2
Dudeştii Vechi-Pusta Bucova Mound IX/no.2	-	II	rectangular	partially curved	I	→	Tr2
Dudeştii Vechi-Pusta Bucova Mound IV Grave 3	-	II	rectangular	?	I	→	-

Table 2. A typological table of the trapeze-shaped stirrups according to their components.

According to the classification and analysis of the components of trapeze-shaped stirrups, 18 variants of 5 sub-types (1: a–b, 2: a–c) of two types (Types 1–2) have been distinguished by us. Sub-type Tr1b contains 8 variants, among which Variants 1–2 and 5–8 are made up of one item respectively, whereas Variants 3 and 4 contain two items each.

Three sub-types of stirrups with ‘knob’ ornaments between the arches and the foot plate have been categorized into Type 2 of trapeze-shaped stirrups. 7 variants can be categorized into sub-type ‘a’ of Type 2, out of which Variants 4–5 contain one item each, Variants 1–2 and 6–7 contain two and Variant 3 contains five items. The main characteristic feature of the stirrups with trapeze-shaped body is the rectangular cross-section of the arches. Sub-types b and c of Type 2 have one variant each. The main characteristic of Sub-type b is the semi-circular cross-section of the arches, whereas the item of Type c has a circular cross-section.

Technological and typological observations (Plate 2)

1. Only one stirrup falls in the category of Sub-type Tr1a, which constitutes a transitional form between trapeze-shaped and pear-shaped stirrups concerning its technology and shape. According to its fan-shaped strap loop, the design of the neck and the rectangular shape of its cross-section, the stirrup found in Grave 4 in the Nădlac cemetery can be classified as a trapeze-shaped stirrup, but the shape of its body resembles that of the pear-shaped stirrups and the ‘knob’ ornament is also missing here. Therefore, based upon its outside features this stirrup can be defined as the prototype of trapeze-shaped stirrups forming a transitional item between the two groups of stirrups. At the same time, it also has to be mentioned that this stirrup is much lighter than many of the pear-shaped stirrups (167.3 grams). This type must have been the prototype of classic trapeze-shaped stirrups with ‘knobs’ between the arches and the foot plate, which can be as much as 60 grams heavier.

2. Most trapeze-shaped stirrups have a square-shaped cross-section and their openings for the stirrup leather were rectangular. Among the 33 trapeze-shaped stirrups available for us, there is no ‘knob’ ornament on 12, which constitute 36.36%, or approximately one third of the material. In some cases stirrups with ‘knob’ ornaments were found together with stirrups without these ornaments, so there

can't have been a chronological difference between the use of the two sub-types. Nevertheless, it begs the question whether the lighter trapeze-shaped items without 'knob' ornaments can be considered a transitional type or prototype, and thus the stirrups classified by us as Type 1 could have appeared earlier (certainly it does not mean that this sub-type could not have been used later). This theory is supported by the transitional pear-shaped stirrups (Alba Iulia-Stația de Salvare, Măsca nos. 5–6, Pecica Item 1) or Variant 1a of the trapeze-shaped stirrups that resemble the pear-shaped stirrups.

3. One of the most characteristic features of the trapeze-shaped stirrups, as opposed to pear-shaped stirrups, is that the neck was under the strap loop, which can be observed on each item of both types. In our opinion, it can clearly be connected to the shape designs of the earlier stirrups of the 8th and 9th centuries, which can be observed in a few cases on the pear-shaped stirrups too.

4. In many cases the design of the foot plate is curved, it is mainly characteristic of the trapeze-shaped stirrups with 'knob' ornaments.

Their geographical distribution and chronology (Fig. 17–18)

In our analysis, trapeze-shaped stirrups have been divided into two types, the dividing criteria being the 'knob' between the arches and the foot plate apart from other features. However, they are known from all the three regions in the Transylvanian Basin in small numbers. (Fig. 17)

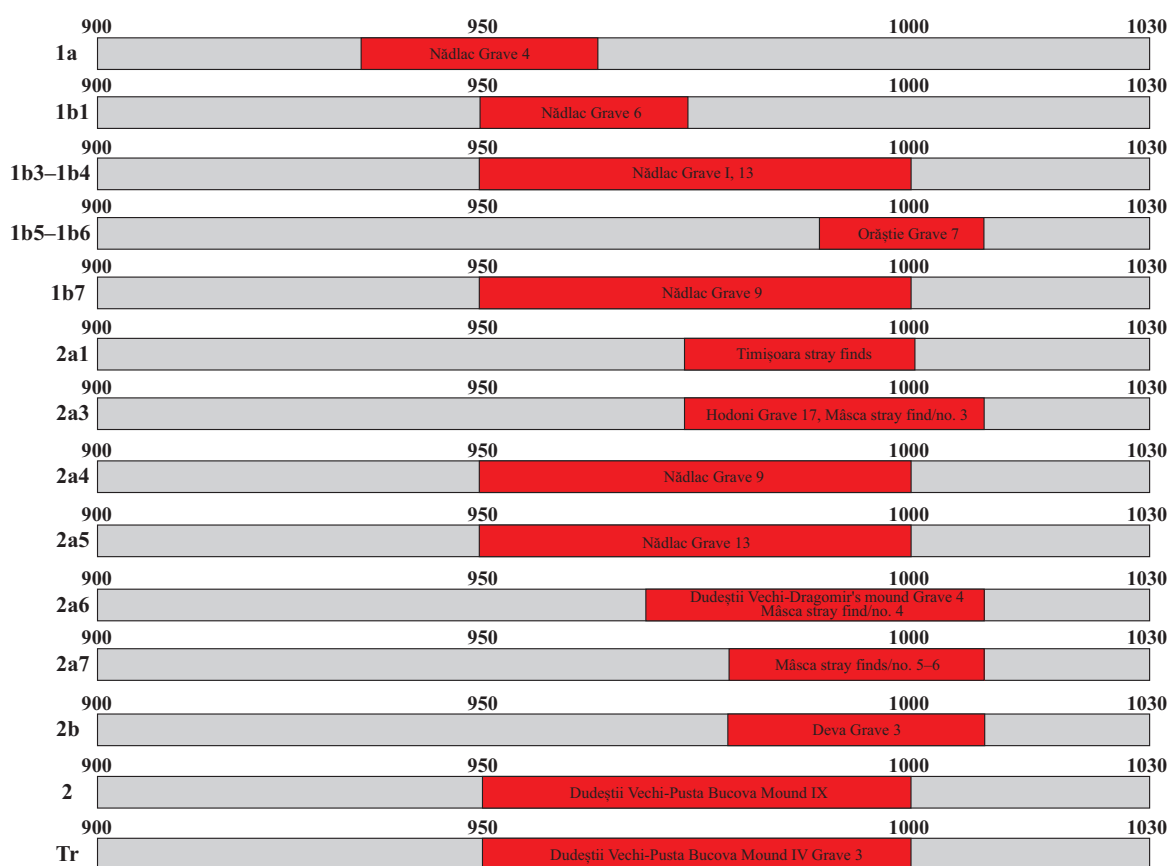


Fig. 18. The relative chronology of the trapeze-shaped stirrups in the Transylvanian Basin, the Crișana/Partium and the Banat.

The chronological analysis of this type of stirrups was carried out by László Kovács three decades ago. According to the materials he collected, this item became common in the second half of the 10th century and it was mainly characteristic of male graves²⁸. However, Kovács did not make a distinction among the types, sub-types and variants of the trapeze-shaped stirrups. It is important because the stirrup of type 1a excavated in Grave 4 in Nădlac can be considered the prototype of trapeze-shaped stirrups, so this item may constitute a transitional form between the trapeze-shaped and the pear-shaped stirrups. In our opinion, this fact casts a different light on the evolution of trapeze-shaped stir-

²⁸ Kovács 1986, 204–225.

stirrups and in general on the evolution of stirrups in the 10th century Carpathian Basin. This assumption is supported by the location of the grave within the cemetery as Grave 4 is situated right in the middle in the two lines of graves that stretch from the north towards the south. The grave in which the stirrup of Type Tr1a was found dates from the middle of the century, but the stirrup must have been made one or two decades earlier, so the characteristic features of the stirrup that can be considered the prototype of the trapeze-shaped stirrups might have appeared as early as the thirties of that century. Taking it into consideration, the following chronological system of the trapeze-shaped stirrups has been drawn up by us:

C.1.4. Stirrups with straight foot plate, curved arches and strap loop with neck (also called Révész's type 1 and 2)²⁹ (Fig. 19; Plate 3/3)

The items that are classified into this category: Felnac–2 items, Alba Iulia-Stația de Salvare Trench XXXIII/Grave – 1 piece, Șiclău Grave 8 – 1 piece (*Annex 2: S. 2, 35*). On the item excavated in Grave 8 in Șiclău it can be observed that its curved foot plate broke due to its long use and later the two parts were attached by grooving. This practice can be observed in many cases on the stirrups of the time of the ‘Hungarian conquest’, mainly on those items where they tried to change the shape of the foot plate³⁰.

This stirrup type, which was scanty in the Carpathian Basin, has recently been analysed by László Révész in a paper. However, his chronological observations must be accepted with some reservations, the items he dated to the first two thirds of the 10th century can be dated to an earlier period in two cases. Our earliest item is the stirrup excavated in Grave 8 in Șiclău, the item found in Felnac dated to a somewhat later period was taken to a museum at the beginning of the 20th century together with other finds dating from the second half of the 10th century and the early 11th century. The dating of the item excavated in the cemetery in Alba Iulia-Stația de Salvare is doubtful; it can be dated to the second half of the 10th century.

C.1.5. The ‘Cluj’ (‘Kolozsvár’) type (Fig. 19; Plate 3/4)

It is represented by an unknown type in the literature, which comes from Grave 1 – Zápolya Street and because of its uniqueness we suggest the name ‘Cluj’ type. The stirrup found in Grave 1 can be considered a trapeze-shaped stirrup at first sight, although László Kovács did not classify it into this category in 1986³¹. However, László Révész and the author classified it into this type³². The item found in Cluj-Napoca was discussed as part of this group, but due to the characteristic features of its shape, we drew attention to the fact that it cannot be considered a ‘classic’ trapeze-shaped stirrup³³.

This type is a ‘hybrid’ combining the characteristics of two other stirrup types, the stirrups with straight foot plate, curved arches and strap loop, and those of the trapeze-shaped stirrups respectively. The design of the strap loop is similar to that of the strap loop of the stirrup type with curved arches and flat foot plate, but the opening for the stirrup leather on the item found in Cluj-Napoca is very big compared to the strap loop. It is attached to the body of the stirrup or the arches with a long neck. Similarly to the trapeze-shaped stirrups, the shoulders of the stirrups are wide, they are almost aligned with the foot plate of the stirrup and the arches with rhombus cross-section are very thin. Similarly thin arches can only be observed on the second stirrup found in Grave 2 in Rakamaz-Gyepiföld, whose flat foot plate was cut off and a curved metal sheet was riveted on, instead. The foot plate of the stirrup was originally designed to be curved, so this second feature does not fit this stirrup type either, which was named by László Révész. Based upon these characteristics it seems that the stirrup must have been made by a 10th century master in a period when the ‘Révész’ type stirrups with curved arches and flat foot plates were still known, but already the trapeze-shaped stirrups were also

²⁹ In the literature first it was called Saltovo type by Csanád Bálint, then Esztergom type by Schulze Dörlamm. The mistakes made by these two authors were corrected by László Révész, who, nevertheless, for reasons he could not affect, did not know the finds from the Crișana/Partium. Révész 1999, 267–299.

³⁰ László Révész listed several such repaired stirrups: Heves-Kapitányhegy, Szomód-Bocskahegy, Rakamaz-Gyepiföld Grave 2. Révész 2001, 77, Note 145.

³¹ Kovács 1986, 204–225.

³² Kovács 1986, 204–225; Révész 1996, 45–46; Gáll 2002, 296.

³³ Gáll 2002, 296.

made, so we can see it as a 'hybrid', and with a small simplification we could compare it to the swords with sabre hilts. Therefore we suggest the name 'Cluj' type for its uniqueness. We date it to the second third of the 10th century due to the above mentioned typological features.

C.1.6. Stirrups with 'forked arches' (Carolingian-Norman variety) (Fig. 19; Plate 3/5)

Two items from one site have been classified into this category: Tărian-Csordásdomb Grave 38–2 items (Annex 2: S. 36). They were dated to the second third of the 10th century the earliest by Károly Mesterházy³⁴. Based on the analysis of Mesterházy, the items excavated in Tărian can also be dated to the first two decades of the 10th century.

C.1.7. Trapeze-shaped stirrup forged together with the strap loop (Fig. 19; Plate 3/6)

Only one item from one site can be categorized into this type: Alba Iulia-Stația de Salvare Trench XV/1981/Grave 20 – 1 item (Annex 2: S. 2). A perfect counterpart of this stirrup was found in Grumezoaia, Moldova 20 km away from the River Prut³⁵, but we know a close analogy also from Mohács-Téglagyár Grave 4³⁶.

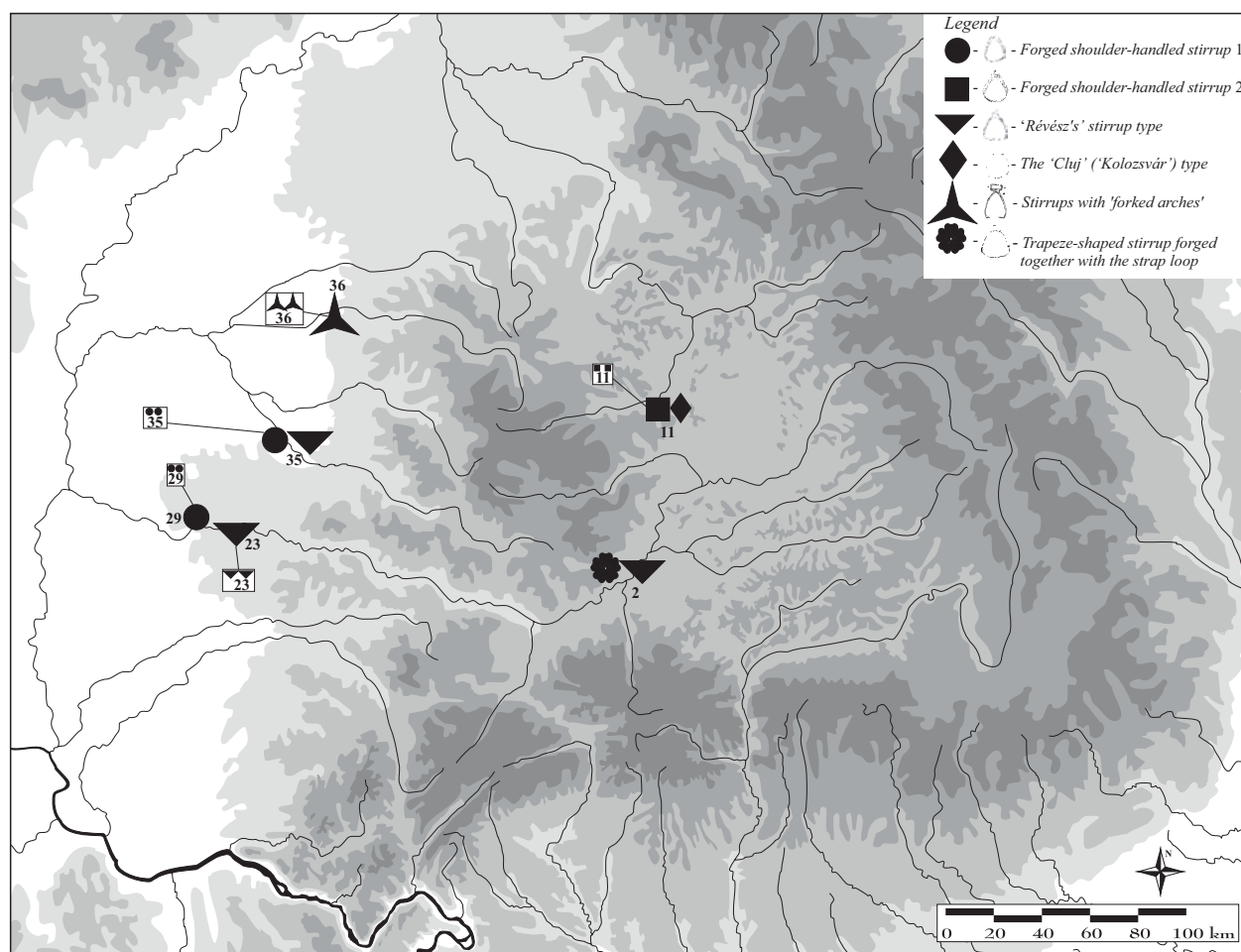


Fig. 19. Rare stirrup types, different from the 10th–11th century trapeze and pear shaped stirrups in the Transylvanian Basin, the Partium and the Banat.

C.1.8. Stirrups of unknown types (Annex 2)

We know of at least 10 excavation sites where stirrups were found whose types are unknown for various reasons: Alba Iulia-Izvorul Împăratului (2 stirrups), Alba Iulia-Stația de Salvare (several stirrups), Biharea-Castle (?), Cluj-Napoca-Zápolya street Grave 9 (2 stirrups), Dudeștii Vechi-Pusta

³⁴ Mesterházy 1981, 220–222.

³⁵ Spinei 2009, Fig. 8. 11.

³⁶ Kiss 1983, 241, 108. ábra 4.

Bucova Mound III (2 stirrups), Dudeștii Vechi-Pusta Bucova Mound VIII (1 stirrup), Dudeștii Vechi Mound VI (2 stirrups), Pecica (1 stirrup), Șiclău point I. E (1 stirrup), Tomnatic-Kleine Hügel Grave 2 (1 stirrup), Vărșand-Laposhalom Grave 33 (2 stirrups) (*Annex 2*: S. 1, 2, 7, 11, 14, 17, 20, 29, 35, 38, 39).

C.2. The importance of weighing the stirrups (Plate 4)

We hold it important to weigh the stirrups from a methodological point of view, as the manufacturing differences or similarities between the various categories of stirrups and the raw material used for them can be detected more exactly. Nonetheless, some data can be gleaned that raise the question in connection with some pairs of stirrups which can be considered to constitute a pair from a typological point of view, but in another aspect their connection as a pair is questioned. Moreover, we considered this analysis important to examine to what extent the statements found in the literature about 'light' pear-shaped stirrups and 'heavy' trapeze-shaped stirrups are true or whether they are just topoi or stereotypes.

Our analyses have shown that the stirrups can be divided into three groups according to their weights:

Group I (the group of light stirrups): between 50–100 grams. Mainly the pear-shaped stirrups (abbreviated as Pe), and a so called '*Révész*' type stirrup can be classified into this category (R). The lightest stirrup that can be categorized here weighs 55.0 grams. 10 pear-shaped stirrups fall in this category altogether with the following sub-type varieties: Pe1a1, Pe1a4a, Pe1a4b, Pe1b3, Pe1b5, Pe3a4, Pe3b varieties are represented by 1 item each, whereas 2 items fall into the categories of Pe1d and Pe3a3. The only '*Révész*' (R) type stirrup is a similarly light one (60.0 grams). Only one trapeze-shaped stirrup falls in this category, Variety Tr1b8 (Banat-stray find). (see Annex 2)

Group II (the group of middle weight stirrups): between 100–170 grams. The typological classification of these stirrups is much more colourful. Besides Varieties Pe1a1, Pe1b3, Pe1c2, Pe1c4, Pe1g1, Pe3a1 and Pe3c of the pear-shaped stirrups, the various sub-types of the four types of trapeze-shaped stirrups (abbreviated as Tr), namely the items of Varieties Tr1a, Tr1b2, Tr1b3, Tr1b7 and Tr2a3 weighing 124–168 grams also fall in this category. Almost all trapeze-shaped stirrups can be classified into Sub-type 1, but in one case, on a stirrup excavated in Grave 17 in Hodoni a 'knob' ornament can be seen where the foot plate is attached to the arches. The stirrups found in Pecica, which represent the first variety of forged shoulder-handled stirrups (113.6 and 126.6 grams), also belong here together with the '*Révész*' 1 type stirrup from Felnac, the stirrup found in Zápolya Street, which is called '*Cluj*' type by us (122 grams) and the ornamented stirrup found in Grave 11 in Zápolya Street, Cluj (150 grams).

Group III (the group of heavy stirrups): above 170 grams. Several categories of stirrups belong to the group of the heaviest stirrups. It must be noted that even among the pear-shaped stirrups there are some that weigh more than 170 grams. The heaviest ones are the Arad-Ceala varieties of Type Pe3a2 and the stirrups of Type Pe1g1 from Mâsca, which resemble the trapeze-shaped items concerning their strap loops and Type Pe2d2 from Pecica, which is the closest to the shape of the body of trapeze-shaped stirrups. Most trapeze-shaped stirrups, namely Tr1b1, Tr1b3, Tr1b4, Tr1b7, Tr2a2, Tr2a3, Tr2a4, Tr2a5 and Tr2a7 weighing approximately 200 grams also fall in this category. The forged shoulder-handled stirrup (F2) excavated in Grave 8 in Zápolya Street Cluj weighs 192 grams and the so called '*Révész*' type stirrup from Felnac has a similar weight.

The following observations can be made as a result of our investigations:

1. Based on Pl. 4 it can be argued that the lightest stirrups are the *flat ended pear-shaped* ones. Nevertheless, it would be a mistake to suppose that all of the pear-shaped stirrups can be classified in the group of *light stirrups*, since there are pieces weighing 150, 170 and 178 grams, and even stirrups of 200 grams can be found among the transitional ones.

2. Not all trapeze-shaped stirrups are heavy. A few examples are much lighter than some of the pear-shaped stirrups categorized in the lighter group and the stirrups with forged ears, among which only one was decorated with a 'knob' at the meeting point of the arches and the foot plate (Hodoni-Pocioroane Grave 17 – Stirrup 1). We can conclude that among the pieces of stirrups the trapeze-shaped stirrups are the heaviest indeed, especially the items belonging to sub-type 2 with 'knobs'.

3. Among the heavy pieces we find the archaic stirrups with forged shoulders from Cluj-Napoca-Zápolya Street Grave 8 and also the 'Révész' type from Felnac – 2nd stirrup.

In the light of this analysis we can see a more detailed picture of the weights of the 10th century stirrup types, sub-types and their varieties. It seems clear to us at this moment that the weights of I – A and B sub-types of the trapeze-shaped stirrups without 'knobs' do not differ from the weights of most of the pear-shaped ones, with forged ears, or from the 'Cluj' type and the curved arches 'Révész' type stirrups. Naturally, these patterns will have to be completed with new stirrup weights, but in our opinion, a certain tendency can clearly be seen.

C.3. Ornamented stirrups (Fig. 20–24; Plate 5–7)

In the region researched by us 10 stirrups were decorated: the one found in Grave 1 in Zápolya Street called 'Cluj' type by us, the pear-shaped stirrup of Type Pelal from Grave 11 in the same cemetery, and from the group of trapeze-shaped stirrups the ones from Grave 17 in Hodoni, the stirrups found in Régi Pósta Street in Periam and the four stray finds excavated in Másca. In each case, the arches and parts of the strap loop were ornamented by different methods and technical solutions. Based upon their differences they have been divided into two groups by us, noting that there are no typological connections between them. As the ornamentation on the item found in Grave 1 in Zápolya Street has not been preserved, we could not classify it.

C.3.1. Group I (Fig. 20–22; Plate 5–6)

The stirrup in Grave 11 Cluj was made with the so called 'plaque' technique. The arches of the stirrup and the two sides of the neck were probably ornamented with the same curved silver plaque. At the edges of the arches a furrow ran along which the silver plaque was hammered into. Before the silver plaque was fastened onto the stirrup arches and the neck, 19 pear-shaped ornaments which were made of brass plaques with their tips outward were placed in the furrows in the following fashion: the edges of the brass plaques were bent a little into a curved shape, and the edge of the object was bent into a right angle and then they were hammered into the pear-shaped furrow that had already been engraved. It can be supposed that each pear-shaped ornament was hammered into a separate hole because on the macro photos taken by us it can clearly be seen that the tiny pear-shaped holes are of different sizes, so they were made one by one. The ornamentation was preserved on both sides of the strap loops, on which the silver plaques were hammered independently of the arches.

On the Cluj-Napoca stirrup the aim to emphasize the contrast of light and dark colours is obvious: the base plaque is light and the pear-shaped ornaments are darker. It is clear that this contrast aims to boost the optical effect of the object in the eye of the observer. This effect of harmony, nevertheless, requires further investigation.

The stirrup found in Grave A Rakamaz-Strázsadomb (?) and the one in Grave 2 Berehove/Beregszász are almost the exact counterparts of the stirrup analysed by us³⁷. Both items were found in typical graves of the 'conquering Hungarians' with rich furnishings (Rakamaz Grave A: garment buttons, an ornamented belt, a sabre with gold accessories, a death mask made of gold plaques, a sabre tache; Berehove/Beregszász Grave 2: an ornamented belt, a sabre, bits). If the stirrup in Rakamaz was really found in Grave A, its position within the cemetery allows us to infer that it could not have been placed in the grave before the second third of the century. The person in the Beregszász grave was categorized as 'a member of the first (biological) generation' by Károly Mesterházy, but it is difficult to date Grave two within the 10th century. In Grave 1, which was found approximately 30 metres south of Grave 2 in 1890, a stirrup with forged strap loop and with arches with 'knobs' was found together with the well-known mitre tip. In our opinion, the former one can be dated to/from the second third of the century, based upon the 'knob' between the foot plate and the arches. Another similar item is known from the Hungarian National Museum, but nothing exact can be said of it as it was a stray find³⁸. The worn stirrup found in Tarnaörs comes from a ransacked burial with a horse. The ornament on these stirrups is considered Variety I by us.

³⁷ Rakamaz-Strázsadomb (A. H. 1996, 110–119); Berehove/Beregszász-Kishegy (Jankovich 1943, 101, XXIV. táb.).

³⁸ Fettich 1937, 57.



Fig. 20. Cluj-Napoca-Zápolya Street Grave 11 (Macro photos of the ornamentation of the stirrup).

The pair of stirrups found in Grave 1 Poroshalom in Sárrétudvari has a very similar ornamentation. The only technical difference, which is very important though, is that the silver plaque forming the background is missing in the latter case, only the pear- or drop-shaped pattern can be seen on the neck and the arches of the stirrup. This type is considered Variety II by us. It cannot be neglected that in Grave 2, which was excavated next to Grave 1 in Sárrétudvari, similarly to the grave in Cluj-Napoca, leaf-shaped breast band ornaments were found. In Grave 1 Poroshalom a male aged 40–45 lay, so even if this grave was dug in the 930's, the skeleton can be classified biologically to the 'first (biological) generation' of the 'conquering Hungarians'³⁹.

The exact counterparts of this stirrup are the inlaid ones excavated in Grave 54 Püspökladány. Even here only the pattern was hammered in, the silver plaque is missing from the background and the fact that the majority of the inlays is missing indicates that the stirrup was used for a long time. A man aged 64–69 lay in the grave, so even if he died around the middle of the century, biologically he could have belonged to the 'first generation' of the 'conquering Hungarians', and the stirrup must have been made in the first half of the century⁴⁰.

An ornamentation different from the aforementioned can be observed on the stirrup that was found as a stray find in Balkány. On the pear-shaped stirrup of Type 1a1 found in Verébsár dűlő in 1904 leaves can be seen on a small stem with their tips downwards above the silver plaque constituting the background and they meet at the middle of the upper arc. On the outer side of the arches there is a strip separated from the inner field by a grooved furrow, which ends in a leaf pattern on the two sides of the strap end (Variety III)⁴¹.

³⁹ M. Nepper 2002, 394–395, Pl. 344–350. táb.

⁴⁰ M. Nepper 2002, 138–139; A. H. 1996, 248, Fig. 5.

⁴¹ Jósá 1914b, 174; K. K. 1996, 129–130, Fig. 1.

The ornamentation of the next 'plaque' technique (Variety IV) is known from Oros stray find⁴². Likewise, is a pear-shaped stirrup (1a1). The arch and the sides of the strap loop are inlaid with silver strips in square-form filled with pairs of oblique lines and framed by a double line. The strip was hammered into the grooves of the design.

Both sides of the pear-shaped stirrups found in Grave 50 in Cemetery II Karos are ornamented with the 'plaque' technique VI. Based upon those parts that have been preserved in a better condition, they used to form a so called 'wolf-teeth' pattern⁴³.

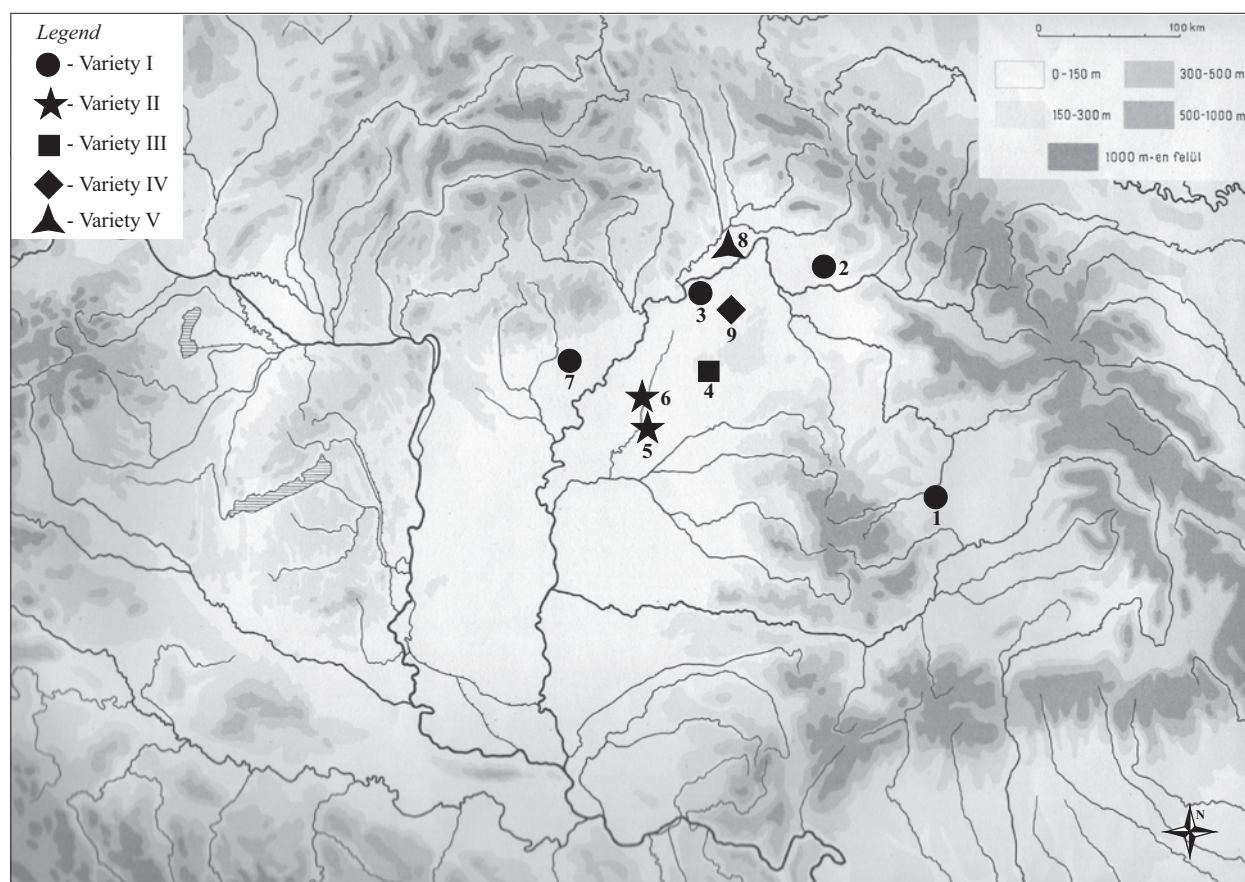


Fig. 21. The 10th century stirrups inlaid with silver or/and copper plates in the Carpathian Basin: 1. Cluj-Napoca/Kolozsvár-Zápolya (actually: gen. Traian Moşoiu) Street Grave 11; 2. Berehove/Beregszász Grave 2; 3. Rakamaz-Strázsadomb Grave 'A'; 4. Balkány stray find; 5. Sárrétudvari-Poroshalom Grave 1; 6. Püspökladány-Eperjesvölgy Grave 54; 7. Tarnaörs-Szentandrás határ stray find; 8. Karos-Cemetery II Grave 50; 9. Oros-Nagyszőlő stray find.

From these data, we can draw the following conclusions:

1. From a technical and aesthetic point of view, the stirrups of Variety I can be considered the most beautiful and most elaborate, which are known only from badly and partly excavated cemeteries, unfortunately. Based upon the aforementioned, to our mind, the stirrups of this type were made in the Carpathian Basin and their owners must have acquired them here.

2. The stirrups made in a similar way can be categorised into the same variety of pear-shaped stirrups (Type Pe1a1).

3. It also has to be mentioned that the skeletons in the graves that can be dated to the first half of the 10th century according to the grave inventories belonged to people aged 40–45 or 60 in all cases.

4. Stirrups ornamented this way are only known from the upper reaches of the River Tisza/Tisa, from the neighbouring regions of Bihor/Bihar and Heves and from the Cluj-Napoca site. In the other regions of the Carpathian Basin this type is completely unknown at the moment.

Therefore these stirrups can be dated to the first half of the 10th century. As can be seen, stirrups with such ornaments are known only from the north-eastern region of the Carpathian Basin, so

⁴² A. H. 1996, 160–161.

⁴³ Révész 1996, 25, 74. táb. 1–2.

their irradiation covered only a small part of the Carpathian Basin. There are several interpretations concerning their geographical distribution from the moving workshops of certain masters and their apprentices to the migration of persons.

If we map the salt quarry areas in the Carpathian Basin we can observe that only on its outer northern areas respectively inside areas in the Transylvanian Basin we can find important salt resources. If we match these geological mappings with the archaeological mappings conducted to date in these areas it is not hard to observe that a part of the funerary finds in the first two thirds of the 10th-century are concentrated in north-eastern areas of the Carpathian basin and the north of Transylvanian Basin.

If we examine other finds dating from the same period in connection with the geographical distribution of this stirrup and its ornamentation, we receive concentric circles which show a great concentration of the find in the region of the Upper Tisza/Tisa and the further one goes, the rarer the finds become. It can indicate the existence of a 'power area' in the given region (the Upper Tisza/Tisa region) and its network system and expansion. We think that the dense concentration of the finds in the region of the Upper Tisza/Tisa may indicate a 'core' centre, a so called 'power area' which created many small interdependent 'power areas' in the Carpathian Basin, mainly in the northern regions reigned by the political-military elite in the 10th century.

If we map the salt quarry areas in the Carpathian Basin we can observe that only on its outer northern areas respectively inside areas in the Transylvanian Basin we can find important salt resources, particularly in the *Someşul Mic* Valley. The presence of the population of the Cluj cemeteries in this part of Northern Transylvania must have been due to the need to control the mining and transport of salt⁴⁴.

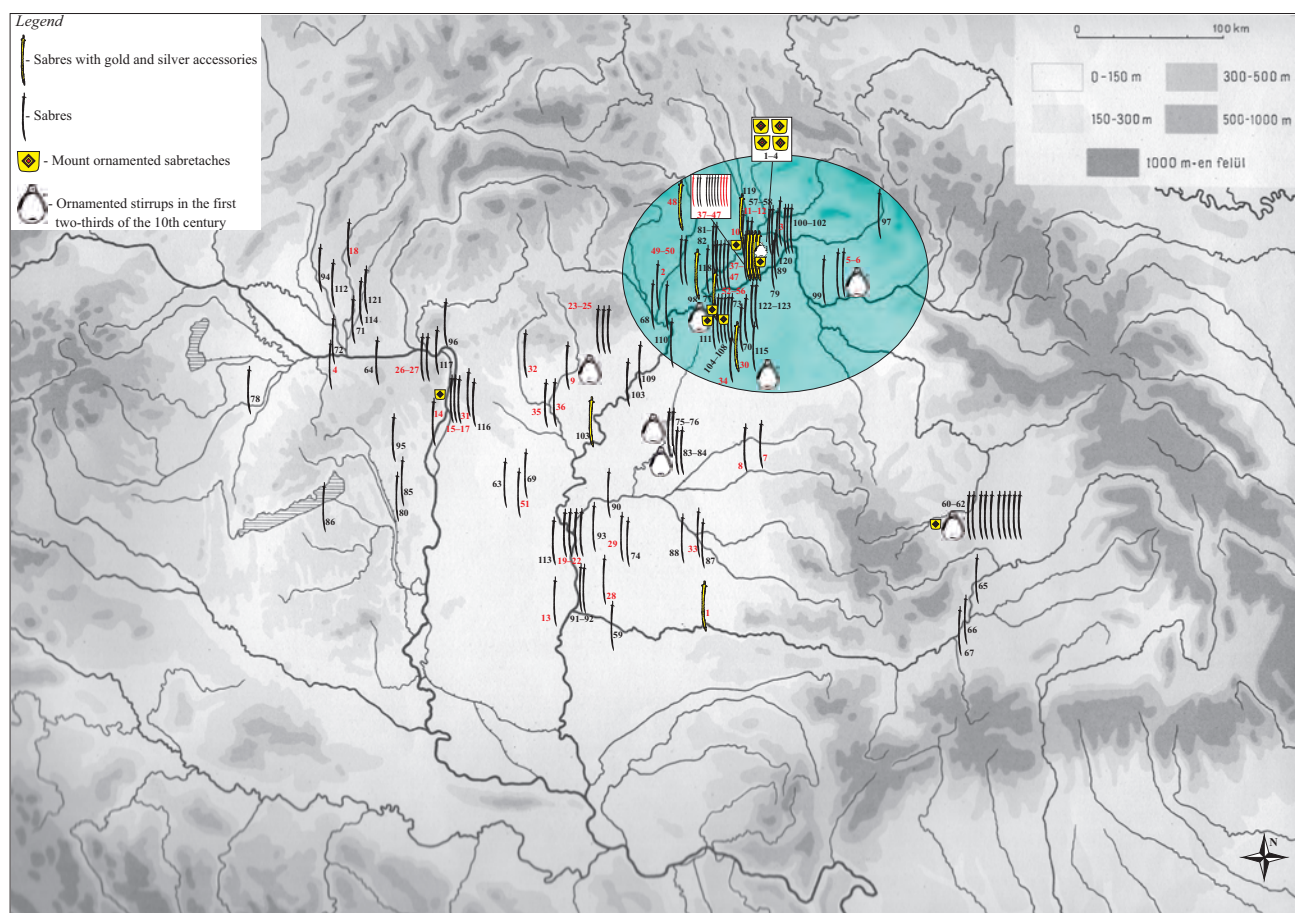


Fig. 22. The 10th century 'core centre' in the Carpathian Basin in the light of the sabres, the ornamented sabre taches and the ornamented stirrups.

⁴⁴ In more detail: Gáll 2013a, 826–931, 911–915; Gáll 2013b, 469–480.

Therefore, the area of Cluj-Napoca could have been a far-flung peripheral ‘power area’ of this power network and according to the cemeteries, similar power areas could have existed within the frames of a peripheral network that was attached to the ‘core’ centre in the Middle Tisza/Tisa region and in the *Kisalföld* (Little Plain). In our opinion, the stirrup found in Grave 11 Cluj-Napoca can be interpreted in this context.

As has already been mentioned elsewhere, the item excavated in Cluj-Napoca must have belonged to a person who was the member of a heterogeneous community controlling the mining and the transport of salt in the *Someşul Mic* Valley. At this moment it cannot be questioned that the western part of the Transylvanian Basin was conquered by the ‘Hungarian’ power structure mainly or exclusively because of the salt in the first half of the 10th century. The question concerning the way this stirrup ended up near Cluj-Napoca, whether through the regional commercial channels attached to the aforementioned power network (nothing is known about the existence of markets, but the Arab *dirhems* found in the Upper Tisza/Tisa region seem to confirm that they existed!⁴⁵) or it was a present or the owner migrated to the region of Cluj-Napoca, cannot be answered by archaeological means. Nevertheless, based upon other items in the grave that had no analogies in the Carpathian Basin, it may be supposed that in this case we can assume the migration of the person.

Group II Subgroups 1–2 (Fig. 23–24; Plate 7)

Each of the stirrups in this group belong to the category of trapeze-shaped stirrups, so the ornamentations on the stirrups from Grave 17 in Hodoni, on the ones found in Régi Pósta Street in Periam and on the four stray finds in Mâsca are the same or similar. They can be divided into two subgroups.

On the two latter items from Mâsca under inventory numbers 45/1898. 5–6. not the simple strip ornamentation can be seen, but on the arches small triangles of wire strips turned towards one another can be observed that were hammered in. This design is very similar to that of the pear- or leaf-shaped ornaments. When examining the objects, the parallel strips can easily be observed. The contrast between the unornamented background and the patterns is striking.

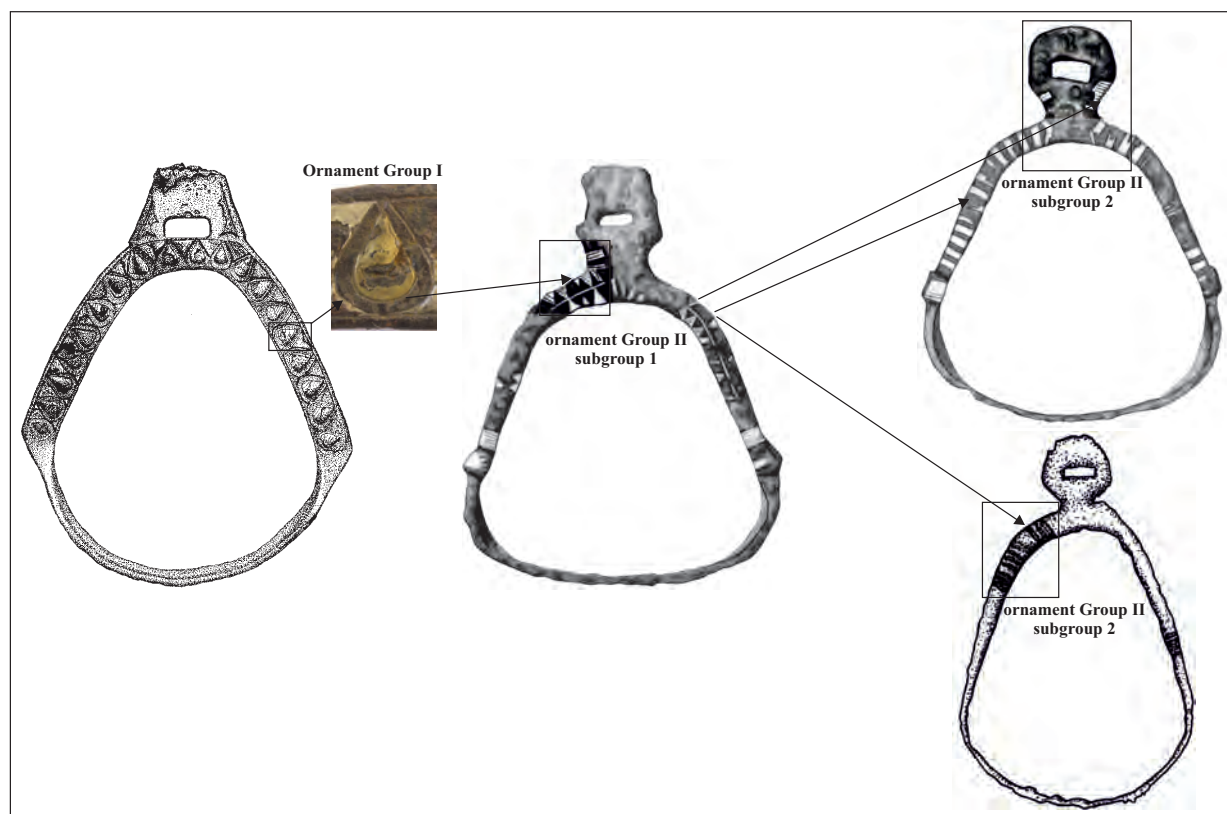


Fig. 23. The relation between the ornamentations of Group I and Group II subgroups 1 and 2.

⁴⁵ Brather 1994–1995, 99.

On the items from Mâsca under inventory numbers 45/1898. 3–4, instead of the strip ornamentation a wide rectangular silver ornamentation can be seen, which were made by putting or hammering thick strips or silver bars into the furrows grooved beforehand. As far as we could observe, the furrows are tapering towards their upper end. A similar technology was applied on the stirrups found in Grave 17 in Hodoni and the items from *Régi Posta Street* in Periam.

Based upon these, we think that there was a distinct evolution in the ways of ornamentation in the 10th century and they were in connection with one another showing that we can talk about the development or change of a local method of ornamentation demonstrated by the previous figure.

Based upon our observations various conclusions can be drawn concerning the ornamentation of Group II of ornamented stirrups:

1. In our region all the stirrups ornamented in this fashion are trapeze-shaped. If one examines their counterparts in other regions of the Carpathian Basin, a very similar picture is given.

2. The ‘genetic’ relation to the ornamentation of Group I (‘plaque’ technique) is supported by the fact that in some cases (e. g. Mâsca–45/1898. 5–6) the silver strips were hammered in the shape of a pear, trying to imitate or replace the current fashion with a new method. So chronologically, ‘plaque technique’ was followed by the technique where the silver or brass stripes were hammered into the furrows grooved on the sides of the stirrup. Based upon these, we think that there was a distinct evolution in the ways of ornamentation in the 10th century and they were in connection with one another showing that we can talk about the development or change of a local method of ornamentation. It is demonstrated by the figure above.

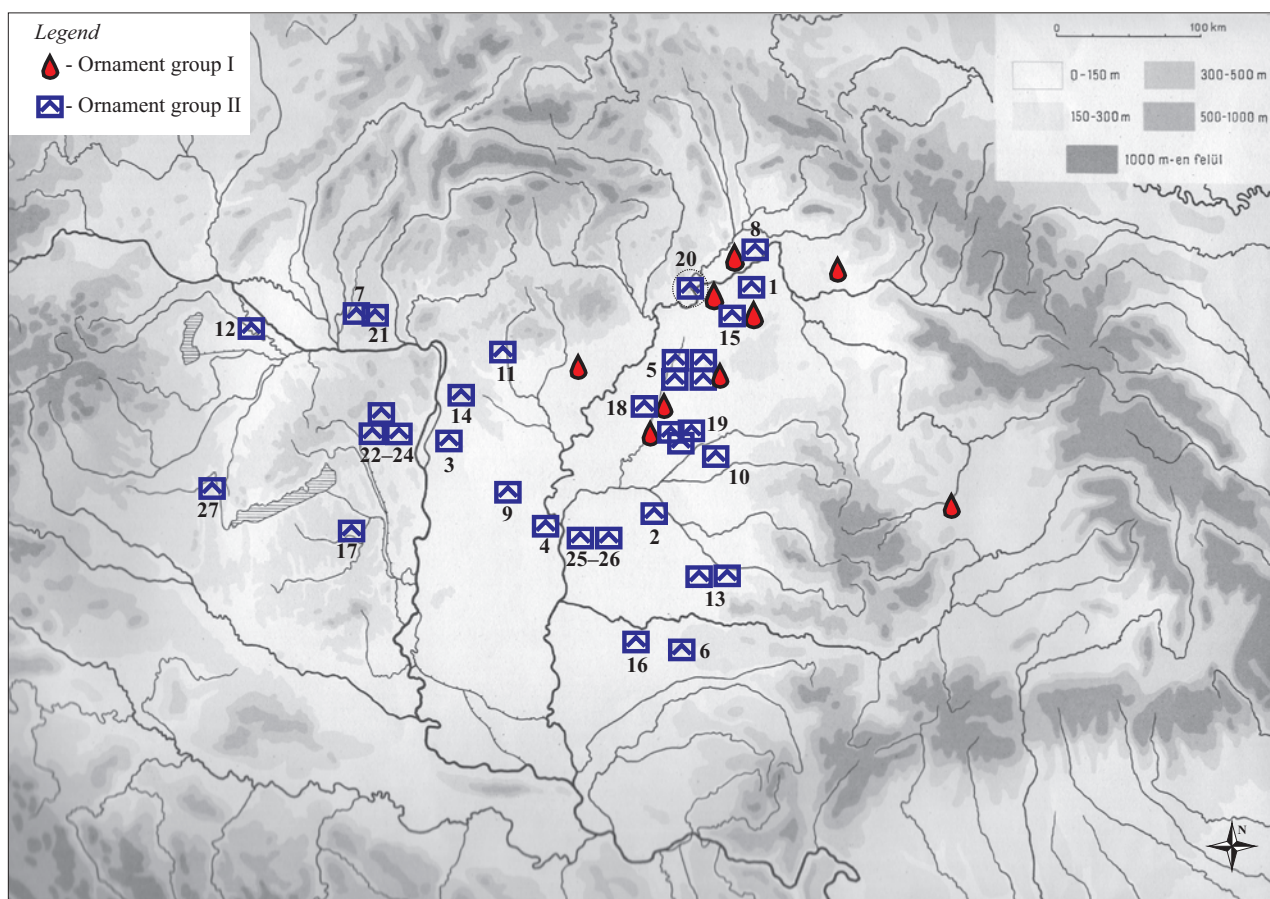


Fig. 24. The geographical distribution of ornamentation Group I and II in the Carpathian Basin (the numbers of the sites of Group I see Fig. 21). Sites where ornamentations of Group II were found in the Carpathian Basin: 1. Beszterec; 2. Békés-Völgypart; 3. Bugyi Grave 20; 4. Csongrád-Vendelhalom Grave 17; 5. Hajdúszoboszló Árkoshalom Graves 74, 114, 145, 185; 6. Hodoni-Pocioroane Grave 17; 7. Hurbanovo-Bagota Grave 3; 8. Karos-Necr. I stray finds; 9. Kecskemét-Magyarai tanya Grave 1; 10. Körösszegapáti-Pállapály stray find; 11. Lőrinci-Selypi puszta Grave 1; 12. Mosonmagyaróvár region stray find; 13. Muszka-Site 1 (Náchtnebel Ödön földje) destroyed graves (3); 14. Nagytarcsa-Homokbánya Grave A; 15. Nyíregyháza-Jánosbokor stray find; 16. Periam-Régi Posta street stray finds; 17. Pincehely destroyed grave; 18. Püspökladány-Eperjesvölgy Grave 200; 19. Sárrétudvari-Hízóföld Graves 41, 185 and 197; 20. Szabolcs county stray find; 21. Svätý Peter-Kisrét Grave 60; 22. Székesfehérvár-Demkóhegy Grave 33; 23. Székesfehérvár-Rádiótelep Grave A; 24. Székesfehérvár-Táci Street Grave 2; 25. Szentes-Nagyhegy destroyed grave; 26. Szentes-Nagytölke destroyed grave; 27. Zalaszentgrót-Téglagyár Grave 1/a.

3. The switch from 'plaque' technique ornamentation (Group I) to the stripes hammered into the arches of the stirrup (Group II) can be explained by the fact that the latter one required much less process and time, therefore much less technical knowledge was needed and it could be acquired by more people. Its much bigger quantity and the fact that it was wider-spread can be explained away by this.

4. The ornamentation type of Group II was common in a completely different geographical area than that of Group I. If the first one is considered to have been characteristic of the north-eastern region (Upper Tisza/Tisa region, Bihar/Bihar region and the area surrounding Cluj), the ornamentation method of Group II can be considered the typical stirrup ornamentation method of the Carpathian Basin. Therefore in connection with the geographical distribution of this ornamentation we can talk about the irradiation of the fashion of stirrup ornamentation in the Carpathian Basin from the middle or the second half of the 10th century.

5. This method of ornamentation is mainly known in the case of trapeze-shaped stirrups clearly attesting a later fashion and manufacturing process. On the other hand, its geographical distribution shows such social processes that can be defined as *structural integration* in the simplest and clearest way.

D. General conclusions concerning the stirrups

According to the general opinion in the literature, the 10th century political-military elite brought an 'exotic' material culture to Central Europe⁴⁶. Therefore it is not surprising that the research of the heirloom of this elite has always been in the focus of research⁴⁷. Not so much has been written on the possible adaptations taking place in the Carpathian Basin⁴⁸. Therefore we try to present our statements and deductions point by point.

D.1. On the evolution of 10th century stirrups (Fig. 25)

D.1.1. Pear-shaped stirrups: continuity and discontinuity in their shape and manufacturing

In the 10th century it was not only the colourful archaeological heritage of the military elite of the age of the 'Hungarian conquest' that meant discontinuity compared with the finds dating from the 9th century, but the shape and the manufacturing method of the majority of stirrups also show this. As has been mentioned above the pear-shaped stirrups of Type 1 with flat arches can be defined as the elements of a completely new material culture compared to the late Avar age, they show a discontinuity concerning their shape and technique. From the point of view of typology and the manufacturing technique, the appearance of this completely new shape (migration and/or technological development) cannot be explained clearly until we have exact data on the weights of the stirrups of the late Avar era. The pear-shaped stirrups with flat arches that have been analysed so far weigh approximately between 50–170 grams (Plate 4), whereas those that can be considered transitional stirrups generally weigh more (200 grams). But it can be stated that in the 10th century these stirrups with flat arches were popular: 42 of the 63 pear-shaped stirrups found in the area researched by us, or 66% of them, have flat arches (Type 1), so it is clear that in the 10th century the new type of stirrup was popular. To establish that this type of stirrup and this manufacturing technique was brought to the Carpathian Basin as a result of the 'Hungarian' migration and political-military conquest, we would need to excavate finds of this type east of the Carpathian Basin dating from the 9th century.

Some features of the pear-shaped stirrups of Types 2 and 3, like the rectangular strap loops, the design of the neck, the round or rhombus arches and the narrow foot plate all show a close resemblance to the shapes and the manufacturing method of the stirrups used in the 8th–9th centuries. Practically, it is only the pear shape that means a change. In these cases one might assume that in the different regions of the Carpathian Basin the new fashionable type was imitated, but the

⁴⁶ For example: Wiczorek/Fried/Müller-Wille 2000, II; Bálint 2000, 342.

⁴⁷ Bálint 2007, 545–562.

⁴⁸ It can be due to the fact that the research of the late Avar period ends with the first quarter of the 9th century, mainly owing to some German influence, and therefore they count with a lack of finds for almost a century except for some peripheral regions and the western part of the Transdanubian region. Stadler 2008, Fig. 9–10.

manufacturing method of the stirrup remained the same. The question as to whether behind this partial technological continuity there was a continuity of the people, or it only indicates a continuity of knowledge and trade cannot be answered yet. However, we consider it of outmost importance to investigate this issue further.

1.2. On the structural connections of the different stirrup types (Fig. 25)

Despite the relevant differences between the shapes and manufacturing of trapeze-shaped and pear-shaped stirrups, a structural connection can be pointed out. It can be observed between some types of the pear-shaped stirrups (Pe2c, Pe3c2, Pe1g1) and Type 1 of the trapeze-shaped stirrups. Therefore these stirrups are considered to be transitional types. Based upon our chronological observations, as a stirrup that was found in a grave dated to the mid-10th century (Grave 4 in Nădlac), it could have merged as the prototype of the trapeze-shaped stirrups back in the 30's of the 10th century. It may not be an exaggeration to call this stirrup a 'hybrid' both from a typological and a technical point of view. It seems that trapeze-shaped stirrups appeared among the populations of the Carpathian Basin as a result of an inner 'evolution' 'development' of this type of object or in other words they are the results of a technological advancement, although some foreign influence cannot be excluded either. Our next figure goes to show this, where we tried to demonstrate this organic evolution in the case of manufacturing stirrups.

The trapeze-shaped stirrups without knobs can be categorised as early items, which is perfectly shown by the find excavated in Grave 41 of Cemetery II in Karos. Certainly, the stirrups without knobs were used at the same time as the trapeze-shaped ones with knobs, which is clearly indicated by the fact that in many cases these two sub-types can be found together in the graves. The knob decoration between the foot plate and the arches became a typical master stroke of the age from the second third of the 10th century (such as Berehove/Beregszász), which were used as decorations and were adapted in the case of trapeze-shaped stirrups in many cases⁴⁹. In the issue concerning to what extent the growing popularity of trapeze-shaped stirrups can be connected to the spreading of double-edged swords, the author of this paper is rather sceptical. In our opinion, they did not spread due to political or military reasons, it can be triggered by the typological evolution of stirrups and the change in material culture for different reasons. To our mind, that the classic variants of this type with 'knobs' can be considered the '*most developed*' items.

D.2. The geographical spread of the stirrups in the Carpathian Basin

Concerning this issue, the question may arise as to how the various types spread at a macro-regional level. At the moment the author of this paper supposes a chain of alternative explanations: an acceptable explanation could be the movement of the masters carrying the knowledge within a region, or the 'migration' of knowledge.

D.3. The issue of ornaments on the 10th century stirrups

The ornamentation of Group 1 of the ornamented stirrups can be dated to the first half of the 10th century. They were limited to the north-eastern parts of the Carpathian Basin as is shown by Fig. 18 and Fig. 22, so they can be considered regional within the Carpathian Basin. Nevertheless, the shape of pear or elongated drop as a decoration can be seen on ornamentations (e. g. Tarcal), being a general ornamentation element of the 'exotic culture' characteristic of the elite of the new 10th century conquerors.

It can be observed that this ornamentation lingered on among the ornamentations in Subgroup 1 of Group II. On the one hand we can talk about a connection between Group II and the ornamentation of Group I concerning their ornamentations, on the other hand, in the aspect of manufacturing one can see a discontinuity as the technique used here was not the so called 'plaque technique', but brass and silver strips were hammered on the furrows grooved on the arches of the iron stirrup. The second version of this ornamentation technique is much simpler: the furrows are made for the brass or silver strips that are hammered into them. However, the geographical distribution of this variant is different from that of Group I: that was a regional type characteristic of the graves with weapons and

⁴⁹ Szőke 1962, 83.

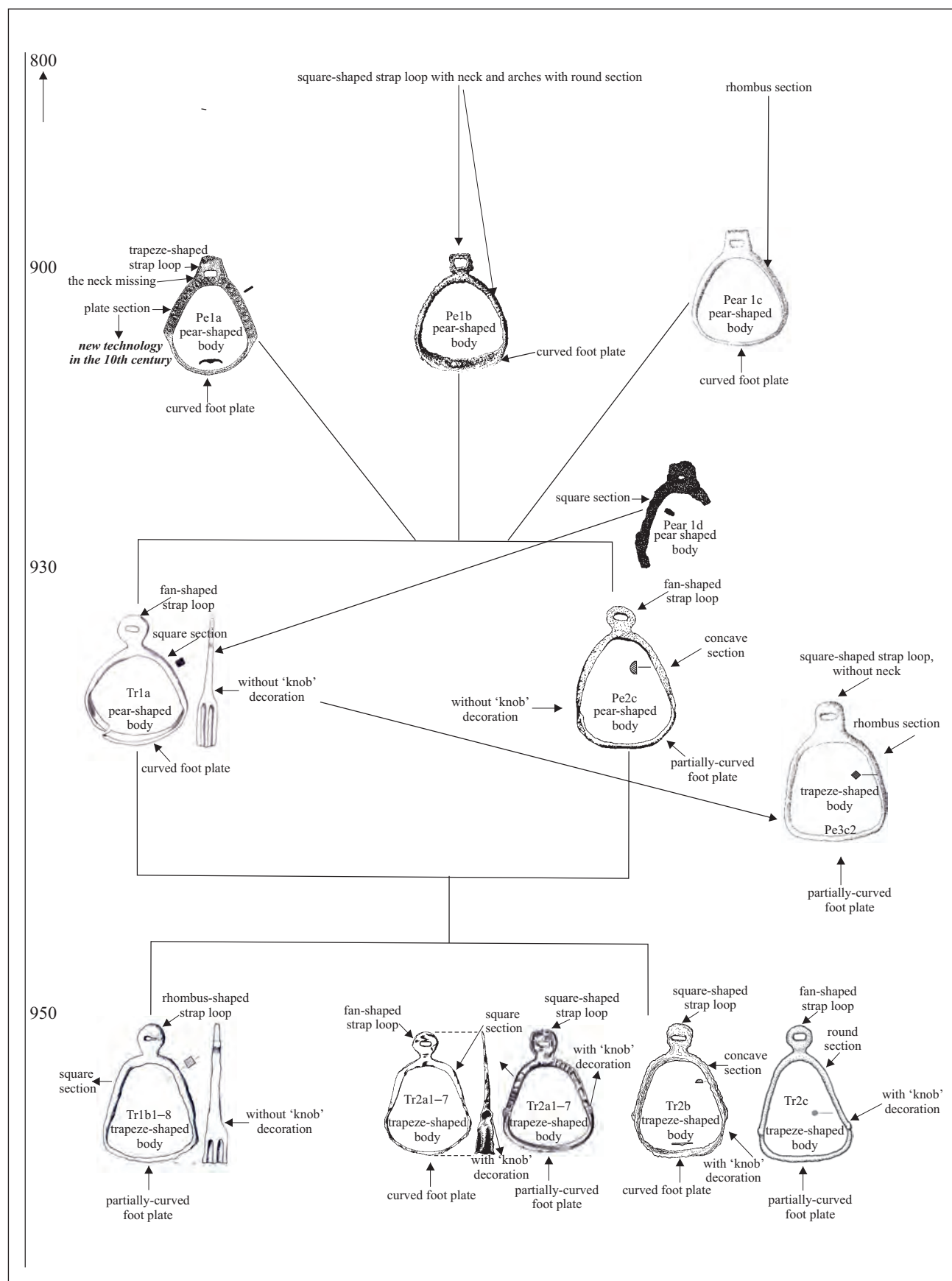


Fig. 25. Structural connections of the different stirrup types and their chronological 'evolutions'.

sabres, whereas this one became common in the whole Carpathian Basin in the second half of the 10th century. It can be firmly stated that we can talk about the irradiation of a fashion and an ornamentation technology. As it may be put a type of knowledge caught on and the commercial channels across the Carpathian Basin expanded. All this could have emerged and worked in a power network.

D.4. Regionalism and the issue of structural integration in connection with stirrups in the Transylvanian Basin (Fig. 26)

As has been mentioned the burials with horses were the scantiest in the Transylvanian Basin, and therefore the lowest number of stirrups have been found here, although among the three regions researched here, this is the one with the highest number of graves known to us. However, the few stirrups are so varied and in some cases represent stirrup types unknown in other regions of the Carpathian Basin that several questions may arise.

In connection with the cemeteries in Cluj-Napoca, which can be dated to the first two thirds of the 10th century, we have already stated earlier that it must have been an organised population of different origins⁵⁰. This is quite firmly supported not only by archaeological but also anthropological research⁵¹. Inferring from their varied burial customs and the harnesses that were in many cases unknown in other parts of the Carpathian Basin, they could have been people brought and organised here to transport the salt and they could have been interdependent of the 'power area' in the Upper Tisza/Tisa region. In our opinion, the stirrup finds reflect the polycultural and heterogeneous characteristics of these communities as there are not two stirrups of the same type except for the ones found in Grave 6 in Zápolya Street and in Grave 25 in Plugarilor Street.

Based upon the varied burial customs we think that a social-political phenomenon called the *structural integration* of the individuals can be observed in the Cluj cemeteries. Besides the various customs registered, the sabre is the primary status symbol in the graves of mature males can be identified as a symbol creating group identity, besides the personal identity. A good example of the structural integration is represented by Grave 4 in Zápolya Street. In this disturbed grave with sabre furnishing, a stone slab of considerable size was placed under the head. It is conspicuous because no such custom is known in the cemetery, on the other hand this custom is common in Central-Eastern Europe, except for the classic cemeteries of the 'Hungarian conquerors', it is known in the Transylvanian Basin too, in Grave 11 of Cemetery Blandiana 'B'⁵² dating from the second half of the 10th century. As can be seen, it is a case when different funerary customs are mixed in the same grave.

The atypical stirrup finds excavated in the valley of the Middle Mureş also raise questions. From the cemetery excavated in Stația de salvare Alba Iulia the stirrups from only two graves are known. Besides the already described atypical pear-shaped stirrup, a trapeze-shaped stirrup with strap loop handles was also found that has no counterpart in the Carpathian Basin, only in the 10th century Moldova. The stirrups found in Grave 7 in Orăștie are also unique in the Carpathian Basin as there is no opening for the strap leather on their strap loops.

Some objects of the material culture (bow end bones, bits and stirrups) found in the cemeteries in Alba Iulia-Stația de Salvare and Orăștie bear significant differences from the classical finds of the 'conquering Hungarians'. **Bits with the single-piece bar were found only in burials east of the Tisza/Tisa (7 burials)!** It also has to be noted that more than half of the bits with single-piece bars were found in Southern Transylvania. It can be supposed, based on the large amount of bar-bit finds, that either a new migration of small groups of populations coming from the east, in the second half of the 10th century, could have taken place or these belonged to the settled people, different from the 'conquering Hungarians'.

Some finds in Northern Transylvania (Cluj-Napoca) and in the region of the Middle Mureş (Alba Iulia, Gâmbaş, Orăștie) show regional features. However, in Cluj-Napoca most finds seem to indicate connection with the Upper Tisza/Tisa region⁵³, whereas the valley of the Middle Mureş have parallels in the Great Plain⁵⁴. The heterogeneity of the finds excavated in northern and southern Transylvania

⁵⁰ Gáll 2013a, Vol. I, 826–831, 911–915; Gáll 2013b, 469–475, 476–478.

⁵¹ Marcsik 2002–2003, 88: note 85.

⁵² Gáll 2013a, Vol. I, 335–336.

⁵³ Gáll 2013a, Vol. I, 822–823, 829–831, 913–915; Gáll 2013b, 474–475.

⁵⁴ Gáll 2013a, Vol. I, 822–823, 831–834, 905–908, 915–917.

draw our attention to the mobility of the smaller and bigger communities, to the economic-commercial networks and to the evolution of the power structures.

The vast commercial system covering the 10th century Carpathian Basin, Eastern Europe and their connections with Byzantium and the Arab world should be further investigated, but it can firmly be stated that in this huge early medieval commercial network, the Transylvanian Basin had an insignificant position as a **periphery**.

Moreover, taking into consideration the quantity of the burials with horses (and therefore the stirrups too) and their geographical locations in the 10th century Transylvanian Basin, it becomes understandable why we can talk about a ‘*peripheral Transylvania*’ in the 10th century! Compared to the finds in the plains of the Carpathian Basin, in the Upper Tisza/Tisa region or in the *Kisalföld* (Little Plain) dating from the first two thirds of the 10th century, in the Transylvanian Basin only some isolated cemeteries are known from the conquest period, so they could not have brought huge masses, it must have been a conquest with another purpose (the need for salt) and therefore one can talk about other power constructions, political and cultural realities and other social processes. So it can be stated that the Transylvanian Basin was in a peripheral position within the 10th century ‘Hungarian power network’, which is reflected by the poor archaeological finds and the wide variety of stirrups compared to other regions of the Carpathian Basin. This can indicate the great cultural heterogeneity of the population. A deeper analysis of them should be carried out in the future.

Appendix:

¹⁴C analysis of the horse bone from Grave 10 Cluj-Napoca Zápolya Street

The analysis of ¹⁴C dating of the bone sample was conducted by HEKAL AMS⁵⁵ Laboratory, Hungarian Academy of Sciences Institute for Nuclear Research ISOTOPTECH ZRT led by dr Mihály Molnár, ¹⁴C expert.

The results are quoted as their radiocarbon age in years before present (yr BP). The values are quoted corrected to -25‰ for δ¹³C. The radiocarbon age is the conventional uncalibrated ¹⁴C age and is quoted in years “before present (BP)”, where “present” has been defined as the expected natural level for ~1950AD. The data have been calibrated with the help of Calib 6.0 (www.calib.org). In the table the 2 sigma (level of reliability is >95%) calibrated time intervals are given.

The following values have been measured:

One Sigma Ranges: [start:end] relative area

[cal AD 890: cal AD 900] 0.186087

[cal AD 918: cal AD 963] 0.813913

Two Sigma Ranges: [start:end] relative area

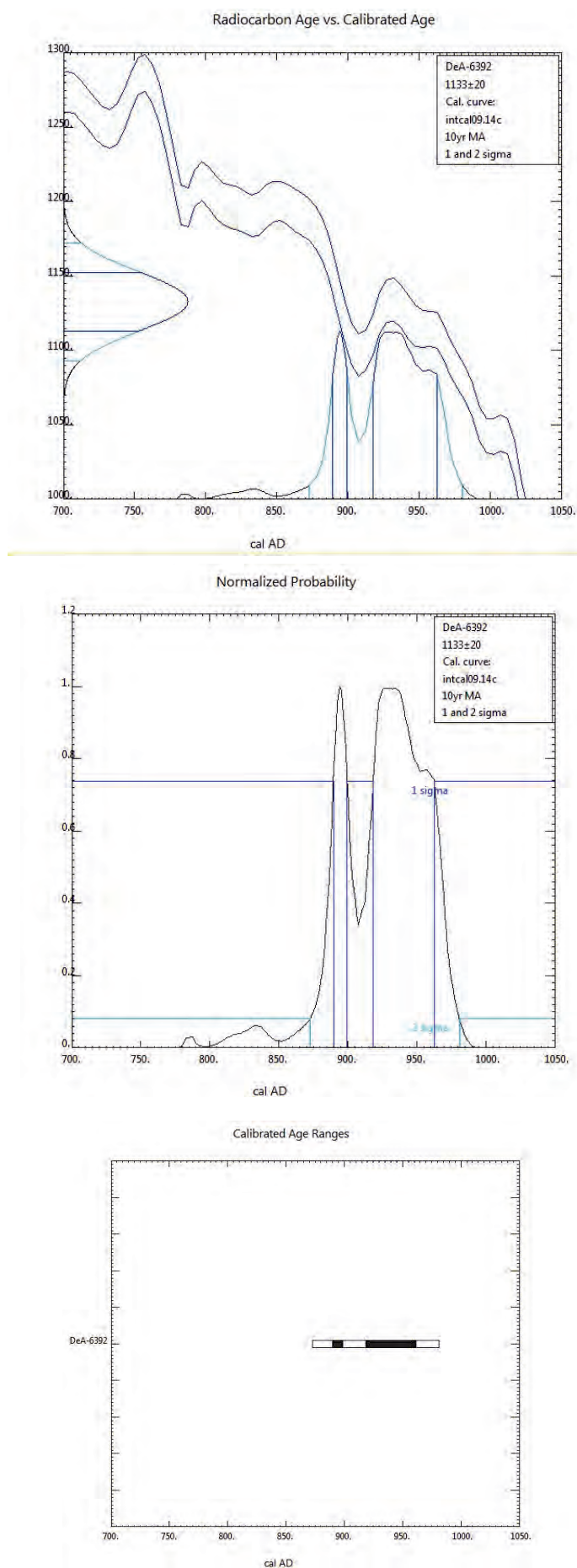
[cal AD 873: cal AD 981] 1.

AMS ¹⁴ C measurement code	HEKAL sample identifier	Name of sample	Conventional ¹⁴ C age (year BP) (± 1s)	Calibrated calendar age (cal AD) (± 2s)
DeA-6392	I/1110/1	Horse bone, Cluj-Napoca, Zápolya Street, Grave 10	1133 ± 20	873–981

Fig. 27. The result of the sigma 2.

¹⁴C analyses of the bone sample resulted the calibrated calendar age range AD 873–981 at 2 sigma probability. One sigma probability age range as the most probable age is between AD 900–963, the first half of the 10th century.

⁵⁵ Molnár et al. 2013a, 665–676; Molnár et al. 2013b, 338–344.

Fig. 28/a–c. The graphs of the ^{14}C analyses.

Annex 1. The remains of 10th–11th century horse burials in the Transylvanian Basin, the Crişana/Partium and the Banat (the list of the archaeological sites used on Fig. 2–3).

1. Alba Iulia-Izvorul Împăratului
2. Alba Iulia-Stația de Salvare
3. Alba Iulia-The Roman Catholic Cathedral
4. Arad-Ceala
5. Arad County
6. Banat (Museum of Banat)
7. Biharea-Somlyóhegy
8. Biharea-Castle (?)
9. Blandiana 'C'
10. Cenadul Sârbesc-Poiana III
11. Cheglevici
12. Cipău (?)
13. Ciucsângeorgiu (?)
14. Cluj-Napoca-Kalevala street? (actually: Semenicultui street)
15. Cluj-Napoca-Plugariilor street
16. Cluj-Napoca-Zápolya street (actually: gen. Traian Moşoiu)
17. Curtuiuşeni
18. Deva-Micro 15
19. Dudeştii Vechi-Pusta Bucova Mound III
20. Dudeştii Vechi-Pusta Bucova Mound IV
21. Dudeştii Vechi-Pusta Bucova Mound V
22. Dudeştii Vechi-Pusta Bucova Mound VIII
23. Dudeştii Vechi-Pusta Bucova Mound IX
24. Dudeştii Vechi-Mound I (Közlegelő)
25. Dudeştii Vechi-Mound V
26. Dudeştii Vechi-Mound VI
27. Dudeştii Vechi-Dragomir's mound
28. Eresteghin-Zádogostető
29. Felnac
30. Hodoni-Pocioroane
31. Mâsca-Site 1
32. Mâsca-Site 2
33. Miercurea-Ciuc-Jigodin
34. Nădlac-Lutărie
35. Orăştie-Dealul Pemilor X2
36. Pecica-Şanţul Mare
37. Periam
38. Săcălaz
39. Salonta-Halom domb
40. Sânpetru German-G.A.S.
41. Sânpetru German-stray find
42. Sântandrei
43. Sfântu-Gheorghe-Eprestető
44. Şiclău-Gropoaie
45. Tărian-Csordásdomb
46. Teremia Mare-Stock Kristóf-Weinflur 36/1
47. Timişoara-Ciorenii
48. Tomnatic-Kleine Hügel
49. Vârşand-Laposhalom
50. Voiteg

Annex 2. The 10th–11th century stirrups in the Transylvanian Basin, the Crişana/Partium and the Banat (the numbering of the archaeological sites used on Fig. 5, 7, 10, 11, 12, 13, 14, 17, 19) (for another data, see: Gáll 2013, Vol. I–II).

Legend

C – stirrups, the 'Cluj' ('Kolozsvar') type
 F – stirrups with 'forked arches'
 Pe – pear-shaped stirrup
 R – Stirrups with straight foot plate, curved arches and strap loop with neck ('Révész's' type)
 LH – trapeze-shaped stirrups with loop handles/ears

1. Alba Iulia-Izvorul Împăratului (Alba county, Transylvanian Basin)

Grave ?. Stirrup no. 1. Type: have no data. Weight: have no data.
 Grave ?. Stirrup no. 2. Type: have no data. Weight: have no data.

2. Alba Iulia-Stația de Salvare (Alba county, Transylvanian Basin)

Trench XV/1981/Grave 20. Stirrup, no. 1. Type: Pe2c. Weight: have no data.
 Trench XV/1981/Grave 20. Stirrup, no. 2. Type: LH. Weight: have no data.

Trench XXXIII/Grave 1. Stirrup.
 Type: R1. Weight: have no data.

3. Arad-Ceala (Arad county, Crişana/Partium)

Grave X. Stirrup no. 1. Type: Pe3a1. Weight: 162,7 grams.
 Grave X. Stirrup no. 2. Type: Pe3a2. Weight: 178,6 grams.

4. Arad-County (Museum of Arad) (Arad county, Crişana/Partium)

Stirrup. Type: Pe1b5. Weight: 88,8 grams.

5. Banat (Museum of Banat) (Timiş county, Banat)

Stray find. Stirrup, no. 1. Type: Tr1b7. Weight: 124,6 grams.
 Stray find. Stirrup, no. 2. Type: Tr1b8. Weight: 93,5 grams.

6. Biharea-Somlyóhegy (Bihar county, Crişana/Partium)

Grave 1. Stirrup no. 1. Type: Pe2a1.
Weight: have no data.

Grave 1. Stirrup no. 2. Type: Pe1c6.
Weight: have no data.

Grave 2. Stirrup no. 1. Type: Pe1c4.
Weight: have no data.

Grave 3. Stirrup no. 1. Type: Pe1d.
Weight: have no data.

Grave 3. Stirrup no. 2. Type: Pe1d.
Weight: have no data.

Grave 4. Stirrup no. 1. Type: Pe3a3.
Weight: have no data.

Grave 5. Stirrup no. 1. Type: Pe1b7.
Weight: have no data.

Grave 5. Stirrup no. 2. Type: Pe1b5.
Weight: have no data.

Grave 6. Stirrup no. 1. Type: Pe2a2.
Weight: have no data.

Grave 7. Stirrup no. 1. Type: Pe1b5.
Weight: have no data.

Grave 7. Stirrup no. 2. Type: Pe1a1.
Weight: have no data.

Grave 8. Stirrup no. 1. Type: Pe1c3.
Weight: have no data.
Grave 8. Stirrup no. 2. Type: Pe1c8.
Weight: have no data.

7. *Biharea-Castle*
Stray find(s). Unknown type of stirrup or stirrups.

8. *Cenadul Sârbesc-Poiana III (Arad county, Banat)*
Grave ? Stirrup, fragmentary. Type: Pe, un-
definable. Weight: have no data.

9. *Cheglevici (Timiș county, Banat)*
Stray find. Stirrup, no. 1. Type:
Pe1a3. Weight: 124,8 grams.
Stray find. Stirrup, no. 2. Type:
Pe1b4. Weight: 135,1 grams.

10. *Cluj-Napoca-Plugariilor street (Cluj
county, Transylvanian Basin)*
Grave 25. Stirrup. Type: Pe1d. Weight: have no data.

11. *Cluj-Napoca-Zăpolya street (actually: gen.
Traian Moșoiu) (Cluj county, Transylvanian Basin)*
Grave 1. Stirrup. Type: C. Weight: 122,0 grams.

Grave 6. Stirrup no. 1. Type: Pe1d.
Weight: 55,0 grams.
Grave 6. Stirrup no. 2. Type: Pe1d.
Weight: 57,0 grams.

Grave 8. Stirrup no. 1. Type: F2. Weight: 192 grams.
Grave 8. Stirrup no. 2. Type: F2. Weight: have no data.

Grave 9. Stirrup no. 1. Type: have
no data. Weight: have no data.
Grave 9. Stirrup no. 2. Type: have
no data. Weight: have no data.

Grave 10. Stirrup no. 1. Type: Pe1c2.
Weight: 157,5 gramm.
Grave 10. Stirrup no. 2. Type:
Pe1b3. Weight: 100,1 grams.

Grave 11. Stirrup. Type: Pe1a1. Weight: 150,3 grams.

12. *Curtuișeni (Bihor county, Crișana/Partium)*
Stray find. Stirrup, no. 1. Type:
Tr2a2. Weight: have no data.
Stray find. Stirrup, no. 2. Type:
Tr2a3. Weight: have no data.

13. *Deva-Micro 15 (Hunedoara
county, Transylvanian Basin)*
Grave 3. Stirrup, no. 1. Type: Tr2b.
Weight: have no data.
Grave 3. Stirrup, no. 2. Type: Tr2b.
Weight: have no data.

14. *Dudeștii Vechi-Pusta Bucova Mound
III (Timiș county, Banat)*
Grave. Stirrup, no. 1. Type: have
no data. Weight: have no data.
Grave. Stirrup, no. 2. Type: have
no data. Weight: have no data.

15. *Dudeștii Vechi-Pusta Bucova
Mound IV (Timiș county, Banat)*
Grave 3. Stirrup, no. 1. Type: Pe. Weight: have no data.
Grave 3. Stirrup, no. 2. Type: Tr. Weight: have no data.

16. *Dudeștii Vechi-Pusta Bucova
Mound V (Timiș county, Banat)*
Grave 3. Stirrup, no. 1. Type: Pe1b1.
Weight: have no data.
Grave 3. Stirrup, no. 2. Type: Pe1f.
Weight: have no data.

17. *Dudeștii Vechi-Pusta Bucova Mound
VIII (Timiș county, Banat)*
Grave. Stirrup. Type: have no data.
Weight: have no data.

18. *Dudeștii Vechi-Pusta Bucova
Mound IX (Timiș county, Banat)*
Grave. Stirrup, no. 1. Type: Tr2. Weight: have no data.
Grave. Stirrup, no. 1. Type: Tr2. Weight: have no data.

*19. Dudeștii Vechi-Mound I (Közlegelő)
(Timiș county, Banat)*

Grave X. Stirrup, no. 1. Type:
Pe1b6. Weight: 80,6 grams.
Grave X. Stirrup, no. 2. Type:
Pe1b4. Weight: 58,9 grams.

20. Dudeștii Vechi-Mound VI (Timiș county, Banat)

Grave. Stirrup, no. 1. Type: have
no data. Weight: have no data.
Grave. Stirrup, no. 2. Type: have
no data. Weight: have no data.

*21. Dudeștii Vechi-Dragomir's mound
(Timiș county, Banat)*

Grave 4. Stirrup, no. 1. Type: Pe1g2.
Weight: have no data.
Grave 4. Stirrup, no. 2. Type: Tr2a6.
Weight: have no data.

22. Eresteghin (Covasna county, Transylvanian Basin)

Stray find. Stirrup. Type: Tr2c. Weight: have no data.

23. Felnac

Stray find. Stirrup, no. 1. Type:
R. Weight: 160,3 grams.
Stray find. Stirrup, no. 2, fragmen-
tary. Type: R. Weight: have no data.

24. Hodoni-Pocioroane

Grave 3. Stirrup. Type: Pe1a1. Weight: have no data.

Grave 17. Stirrup, no. 1. Type:
Tr2a3. Weight: 144,7 grams.
Grave 17. Stirrup, no. 1. Type:
Tr2a3. Weight: > 200 grams.

25. Mâsca-Site 1

Stray find. Stirrup, no. 1. Type:
Pe1g1. Weight: 178,2 grams.
Stray find. Stirrup, no. 2. Type:
Pe1g1. Weight: 164,8 grams.
Stray find. Stirrup, no. 3. Type:
Tr2a3. Weight: have no data.
Stray find. Stirrup, no. 4. Type:
Tr2a6. Weight: have no data.
Stray find. Stirrup, no. 5. Type:
Tr2a7. Weight: 210 grams.
Stray find. Stirrup, no. 6. Type:
Tr2a7. Weight: 187 grams.

26. Miercurea-Ciuc-Jigodin

Stray find. Stirrup, fragmentary. Type:
Pe1b6. Weight: have no data.

27. Nădlac-Țigărie

Grave I. Stirrup, no. 1. Type: Tr1b3.
Weight: 168,3 grams.

Grave I. Stirrup, no. 2. Type: Tr1b4.
Weight: 198,2 grams.

Grave 4. Stirrup. Type: Tr1a. Weight: 167,3 grams.

Grave 6. Stirrup, no. 2. Type: Tr1b1.
Weight: 246,0 grams.

Grave 9. Stirrup, no. 1. Type: Tr2a4.
Weight: 210,4 grams.

Grave 9. Stirrup, no. 2. Type: Tr1b7.
Weight: 171,2 grams.

Grave 13. Stirrup, no. 1. Type:
Tr1b3. Weight: 223,2 grams.
Grave 13. Stirrup, no. 2. Type:
Tr2a5. Weight: 226,6 grams.

28. Orăștie-Dealul Pemilor X2

Grave 7. Stirrup, no. 1. Type: Tr1b5.
Weight: have no data.
Grave 7. Stirrup, no. 2. Type: Tr1b6.
Weight: have no data.

Grave 43. Stirrup. Type Pe1b5. Weight: have no data.

29. Pecica-Șanțul Mare/Nagysánc

Stray find. Stirrup, no. 1. Type:
F1. Weight: 126,6 grams.
Stray find. Stirrup, no. 2. Type:
F1. Weight: 113,6 grams.
Stray find. Stirrup, no. 3. Type:
Pe3c2. Weight: 200 grams.
Stray find. Stirrup, no. 4, fragmentary.
Type: Pe3d. Weight: have no data.
Stray find. Stirrup, no. 5, fragmentary.
Type: Pe2b. Weight: have no data.
Stray find. Stirrup. No. 6. Type: have
no data. Weight: have no data.

30. Periam

Stray find. Stirrup, no. 1. Type:
Tr2a2. Weight: 208 grams.
Stray find. Stirrup. Type: Tr2a3. Weight: have no data.

31. Salonta-Halom domb

Grave 2. Stirrup, no. 1, fragmentary.
Type: Pe4.1. Weight: have no data.
Grave 2. Stirrup, no. 2, fragmentary.
Type: Pe4.1. Weight: have no data.

32. Sânpetru German-G.A.S.

Single grave. Stirrup, no. 1. Type:
Pe3a3. Weight: 84,2 grams.
Single grave. Stirrup, no. 2. Type:
Pe3a3. Weight: 88,8 grams.

33. Sânpetru German-stray find

Stray find. Stirrup. Type: Tr1b4.
Weight: > 200,0 grams.

34. *Şagu*

Stray find: field walk. Stirrup, fragmentary.
Type: Pe2b. Weight: have no data.

35. *Şiclău*

Grave 1. Stirrup, no. 1. Type:
Pe1a4b. Weight: 61,7 grams.
Grave 1. Stirrup, no. 2. Type: Pe1c8.
Weight: have no data.

Grave 2. Stirrup, no. 1, fragmentary.
Type: Pe1c1. Weight: have no data.
Grave 2. Stirrup, no. 2, fragmentary.
Type: Pe1c7. Weight: have no data.

Grave 8. Stirrup, no. 1. Type:
Pe3b. Weight: 60,0 grams.
Grave 8. Stirrup, no. 2. Type: R. Weight: 51,7 grams.

Grave 9. Stirrup, no. 2, fragmentary.
Type: F1. Weight: have no data.

Grave 10. Stirrup, no. 1. Type:
Pe3c1. Weight: 115,6 grams.
Grave 10. Stirrup, no. 2. Type:
Pe3a4. Weight: 97,0 grams.

Grave 11. Stirrup, no. 1, fragmentary.
Type: Pe4.2. Weight: 64,0 grams.
Grave 11. Stirrup, no. 2. Type:
Pe1a4a. Weight: 49,81 grams.

Grave 12. Stirrup, no. 1. Type:
Pe1a1. Weight: 126,0 grams.
Grave 12. Stirrup, no. 1. Type:
Pe1c5. Weight: 59,6 grams.

Stray find, point I.D. Stirrup. Type:
F1. Weight: 103 grams.
Stray find, point I.W. Stirrup. Type: have
no data. Weight: have no data.

36. *Tărian*

Grave 28. Stirrup, no. 1. Type:
Pe2b. Weight: have no data.
Grave 28. Stirrup, no. 2. Type:
Pe1b2. Weight: have no data.

Grave 36. Stirrup. Type: Pe1a2. Weight: have no data.

Grave 38. Stirrup, no. 1. Type:
F. Weight: have no data.
Grave 38. Stirrup, no. 2. Type:
F. Weight: have no data.

37. *Timișoara-Ciorenii*

Stray find. Stirrup. Type: Pe1a1. Weight: 180 grams.

Stray find. Stirrup, no. 1. Type:
Tr2a1. Weight: 190 grams.
Stray find. Stirrup, no. 2. Type:
Tr2a1. Weight: 203 grams.

Grave A. Stirrup, no. 1. Type: Pe1e.
Weight: 178,0 grams.
Grave A. Stirrup, no. 2. Type:
Pe2a1. Weight: 166 grams.

38. *Tomnatic-Kleine Hügel*

Grave 2. Stirrup. Type: have no data.
Weight: have no data.

39. *Vărșand*

Grave 33. Stirrup, no. 1. Type: have
no data. Weight: have no data.
Grave 33. Stirrup, no. 2. Type: have
no data. Weight: have no data.

Stray find. Stirrup, no. 1. Type:
Pe1b3. Weight: 76 grams.
Stray find. Stirrup, no. 2. Type:
Tr1b2. Weight: 142 grams.

40. *Voiteg*

Grave 3. Stirrup, no. 1. Type: Pe1a3.
Weight: 147,82 grams.
Grave 3. Stirrup, no. 2. Type: Pe2d.
Weight: 109,79 grams.

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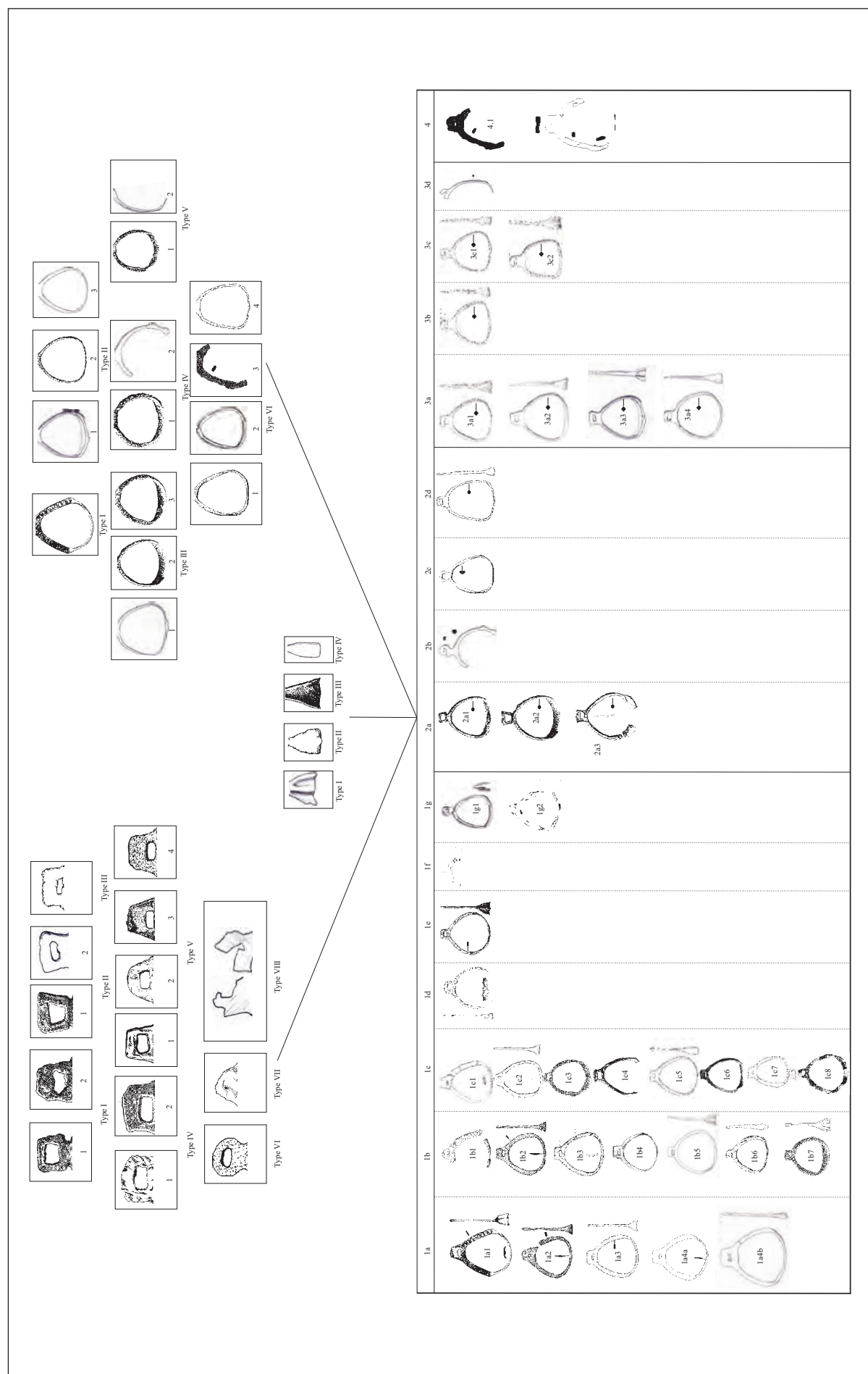
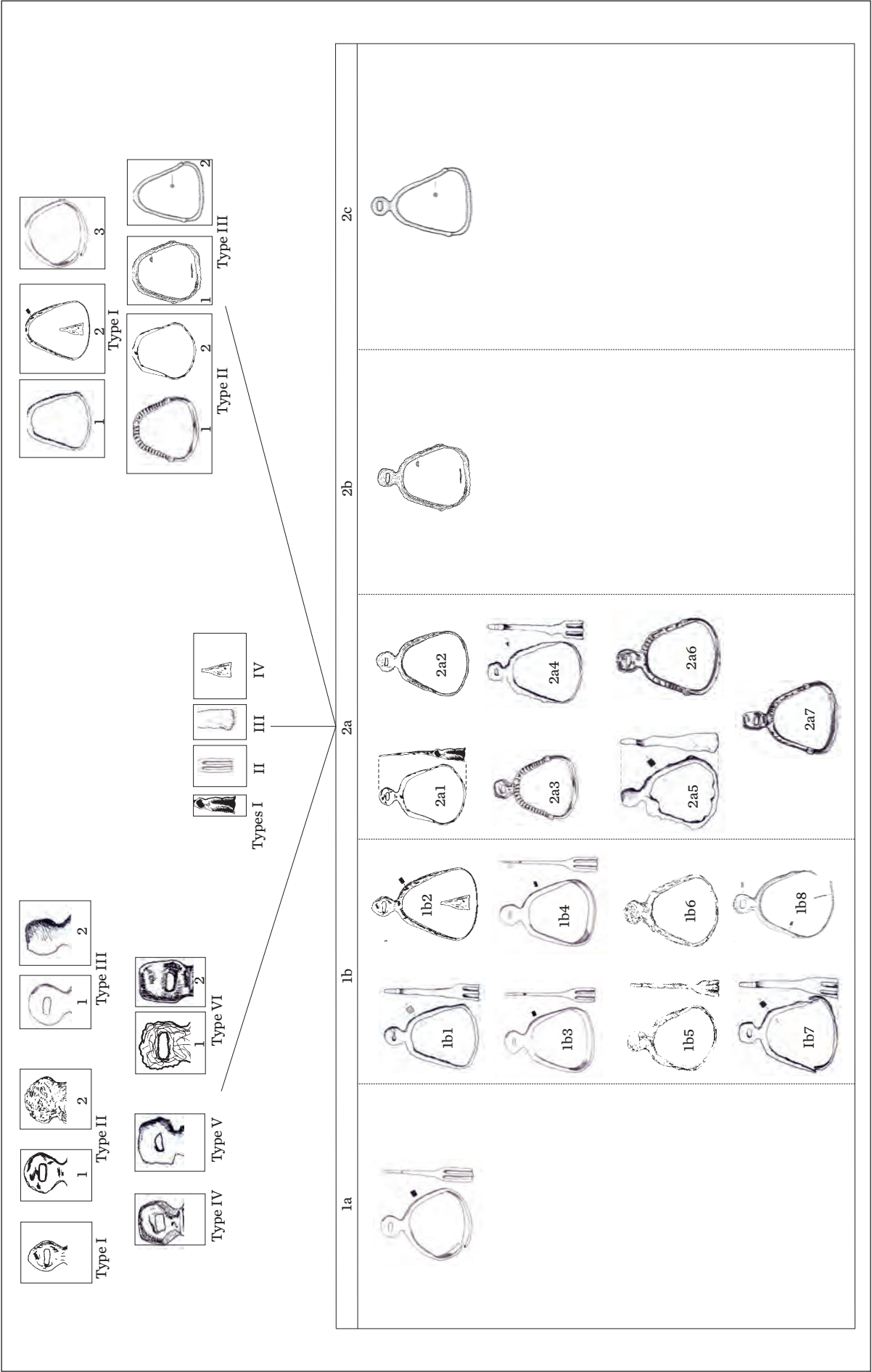


Plate 1. The typology of 10th–11th century pear-shaped stirrups based on their subcomponents in the Transylvanian Basin, the Crișana/Partium and the Banat.



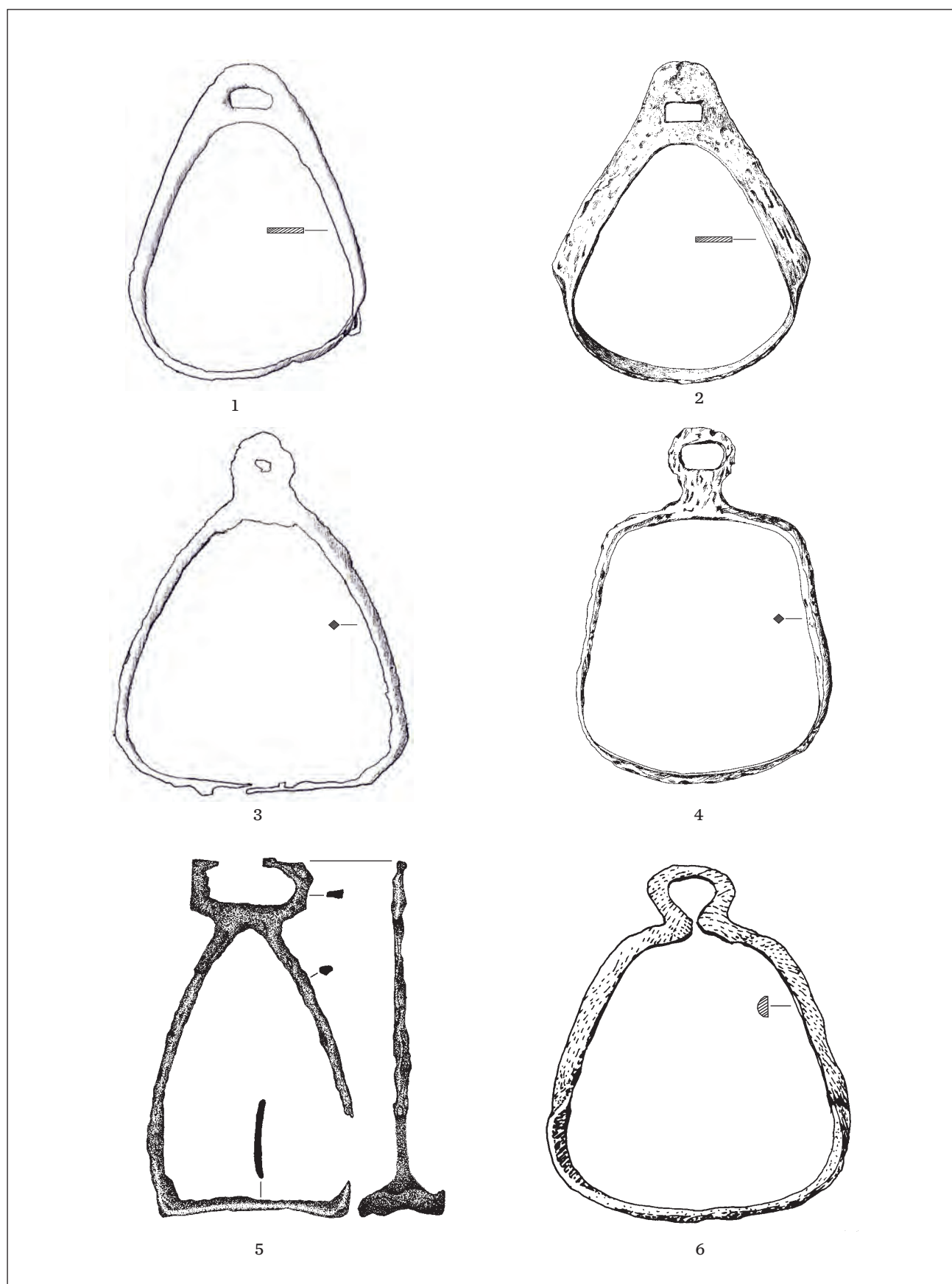


Plate 3. 10th–11th century stirrup types in the Transylvanian Basin, the Crişana/Partium and the Banat. 1–2. Forged shoulder-handled stirrup; 3. The type so called 'Révész' type; 4. The type so called 'Cluj'/Kolozsvar' type; 5. Stirrup with 'forked arches'; 6. Trapeze-shaped stirrup forged together with the strap loop.

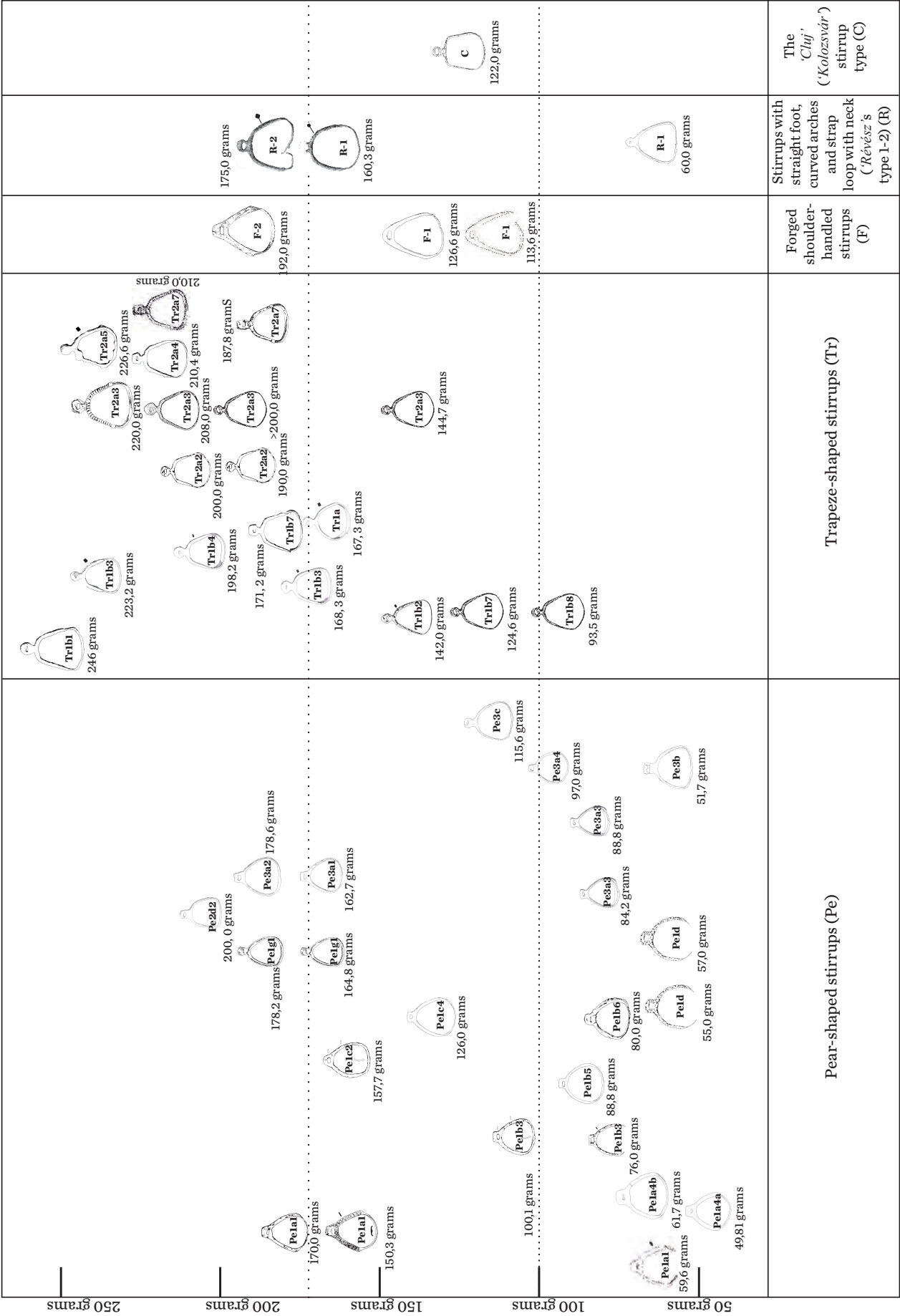


Plate 4. The weight of stirrups according to their types, subtypes and variants.

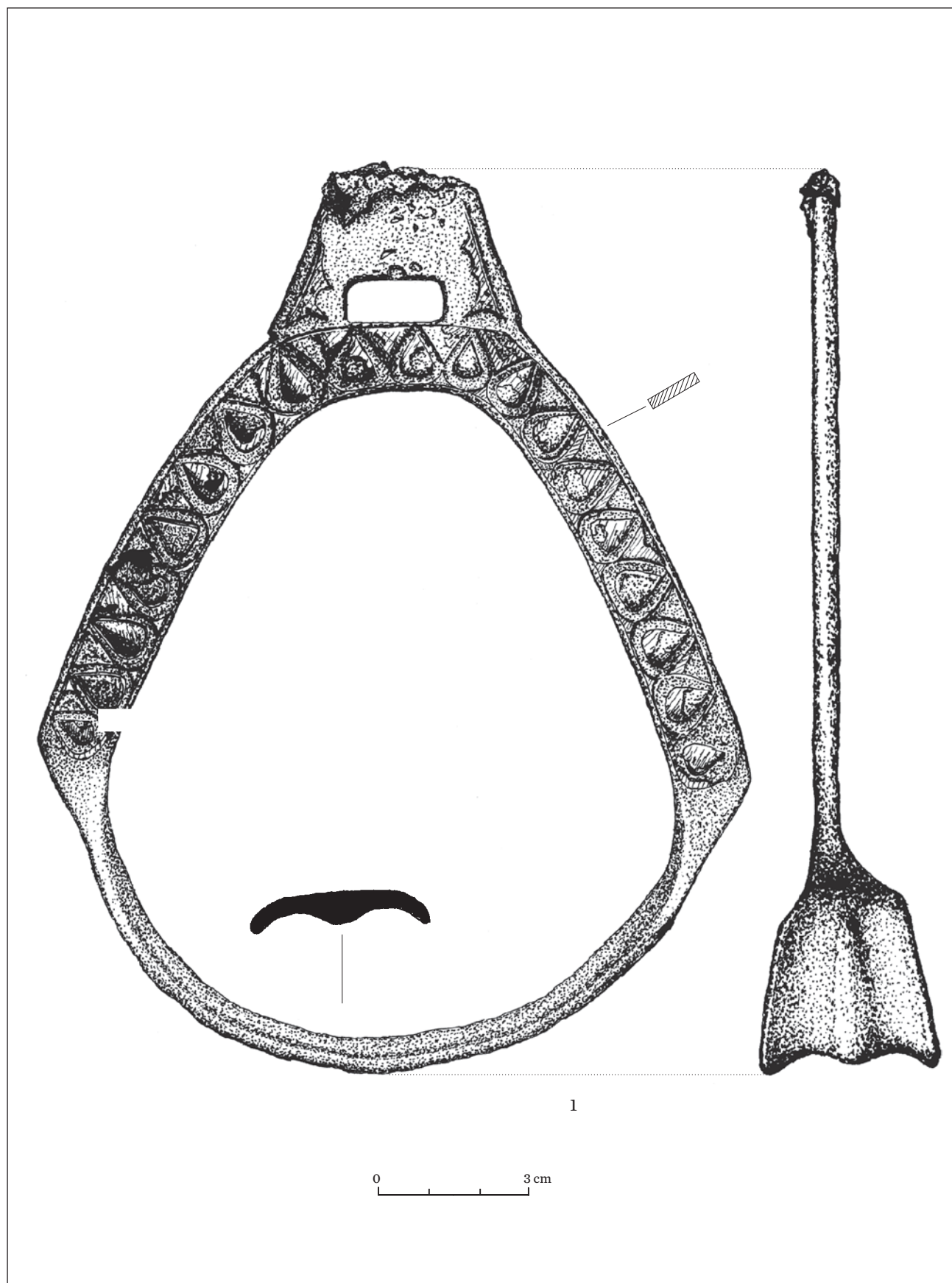


Plate 5. Cluj-Napoca-Zápolya Street Grave 11: 1.

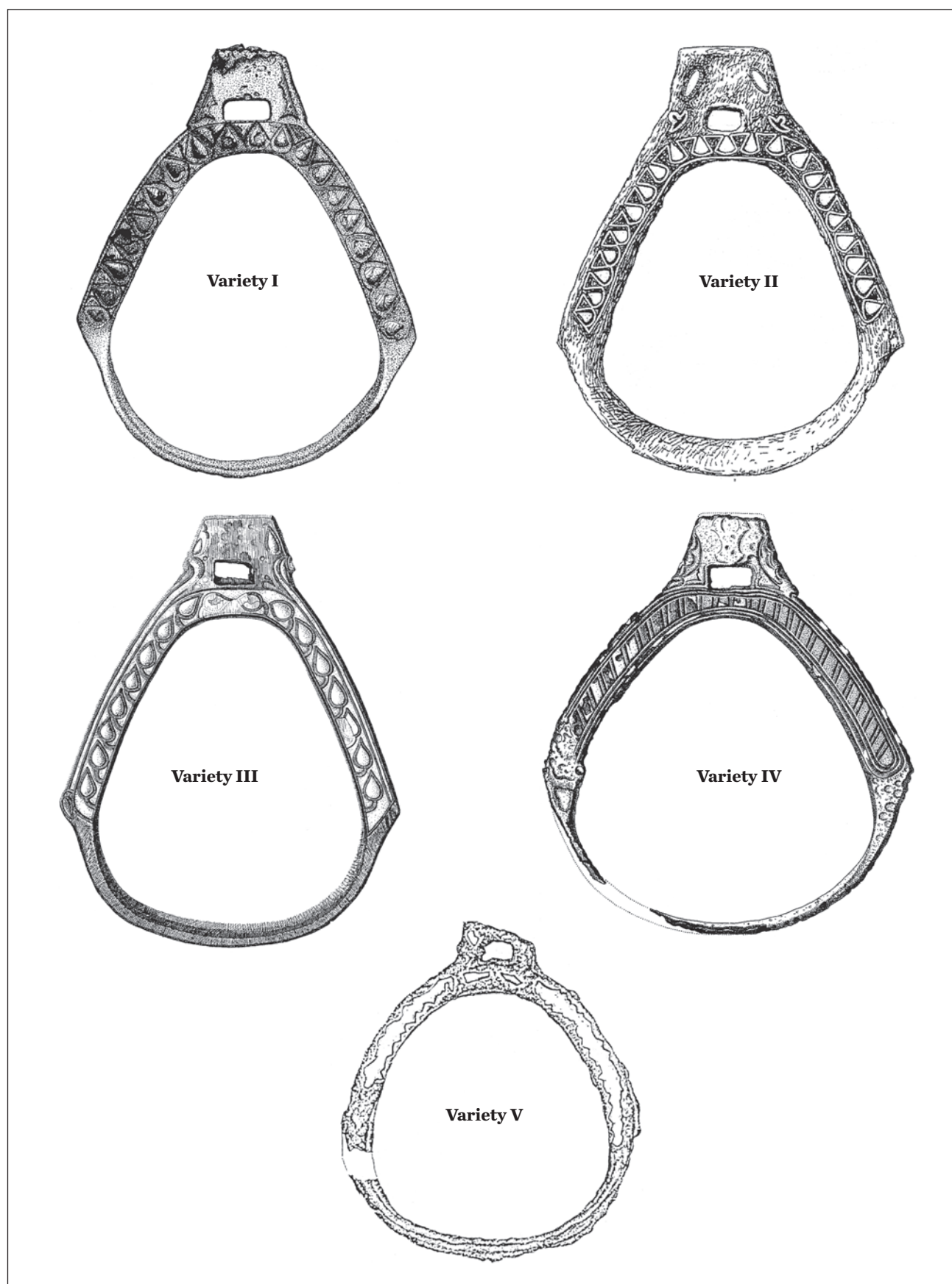


Plate 6. The varieties of the ornaments of the stirrups inlaid with silver or/and copper plates in the Carpathian Basin.

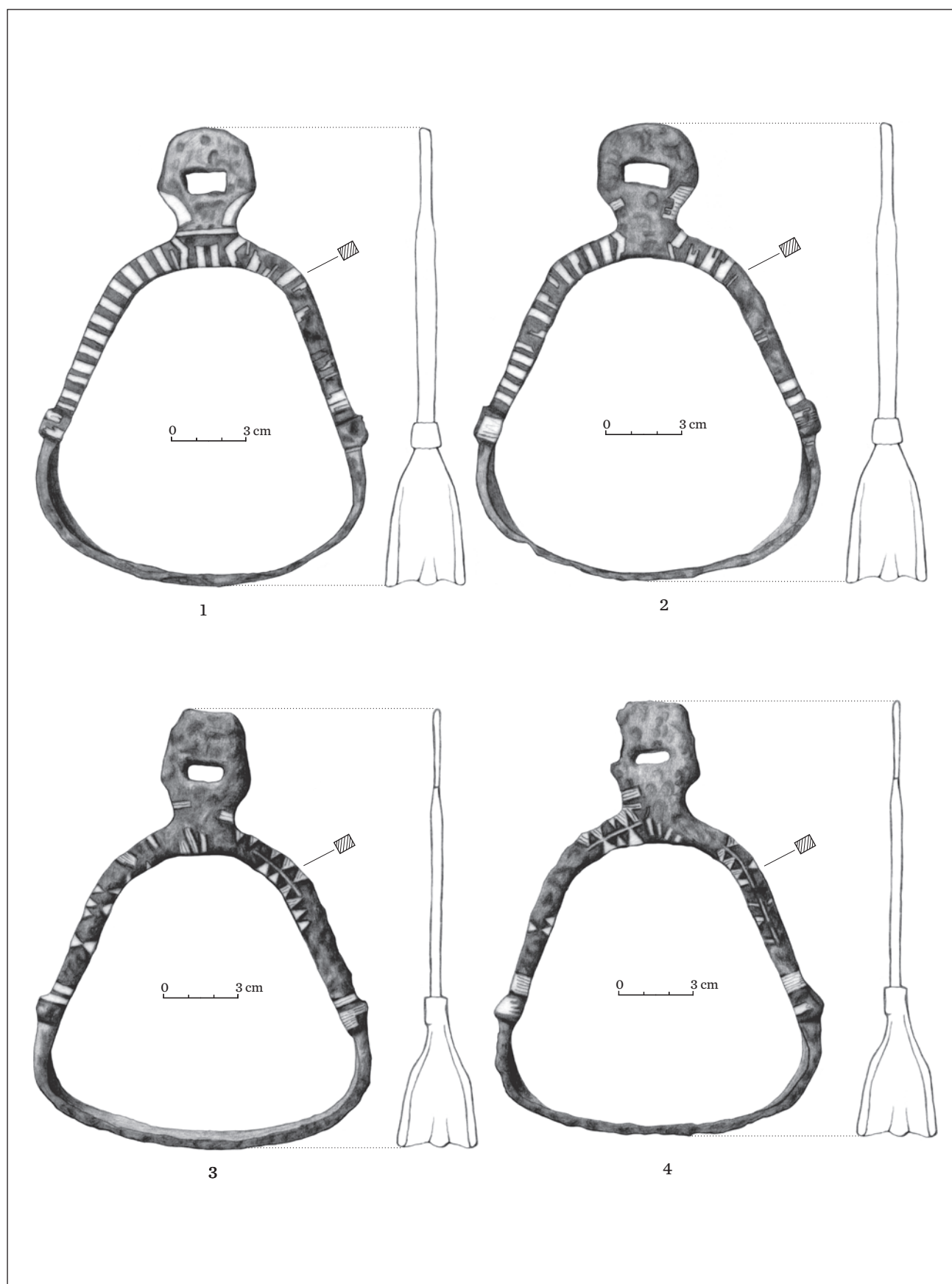


Plate 7. 1-4. The trapeze-shaped stirrups from Măsca-site 1.